Adur & Worthing Councils

Local Cycling & Walking Infrastructure Plan

ADUR & WORTHING COUNCILS

sustrans JOIN THE MOVEMENT

transport initiatives local knowledge national expertise

> We received an overwhelming positive response at the consultation. I'm delighted to support this plan to improve our cycling and walking infrastructure across the Borough

Dan Humphreys

Leader (Worthing Borough Council)

> It's clear that our residents and visitors to the District would cycle and walk more with improved routes. This plan provides us with a fantastic foundation to create the network of the future

Neil Parkin

Leader (Adur District Council)

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Our Vision

To create a place where walking and cycling becomes the preferred way of moving around Adur and Worthing.

In setting this vision and seeking these outcomes wider benefits will be delivered. People will only walk and cycle more when they feel safe to do so, and in places to which they are attracted. So the broader vision is of 'liveable' neighbourhoods, commercial, leisure and retail spaces where people want to spend time and where people feel confident to cycle and walk, and parents feel it is safe for children to play without constant supervision. These are places where people want to stay and associate rather than simply pass through inside a motor vehicle.

The Councils share the government's ambition:
To make cycling and walking the natural choices for shorter journeys and as part of a longer journey

We share the ambition to achieve this through:

Better Safety

A safe and reliable way to travel for short journeys

- Streets where people cycling and walking feel they belong, and are safe
- Better connected communities
- Safer traffic speeds, with lower speed limits where appropriate to the local area
- Cycle training opportunities for all children

Better Mobility

More people cycling and walking - easy, normal and enjoyable

- More high quality cycling facilities
- More urban areas that are considered walkable
- Rural roads which provide improved safety for walking and cycling
- More networks of routes around public transport hubs and town centres, with safe paths and tracks along busy roads
- Better links to schools and workplaces
- Technological innovations that can promote more and safer walking and cycling
- Behaviour change opportunities to support increased walking and cycling
- Better integrated routes for those with disabilities or health conditions

Better Streets

Places that have cycling and walking at their heart

- Places designed for people of all abilities and ages so they can choose to walk or cycle with ease
- Improved public realm
- Better planning for walking and cycling
- More community-based activities, such as led rides and play streets where local places want them
- A wider green network of paths, routes and open spaces

Transport emissions account for over a third of carbon emissions in Adur and Worthing. Unlike the power sector where emissions have fallen by around 50%, transport emissions locally (and nationally) have been virtually unchanged since 2013. The Councils have committed to reducing carbon emissions, yet transport is the most difficult sector to decarbonise. Increasing walking and cycling offers the greatest hope for change.

This Local Cycling and Walking Infrastructure Plan (LCWIP) has been developed and set against the backdrop of these challenges and opportunities. The Councils' are keen to create more walking and cycling networks for their social, economic and environmental benefits.

The Plan was developed, initially by Sustrans and subsequently by Transport Initiatives, for Adur & Worthing Councils, with the support of local stakeholders, in particular the Adur & Worthing Walking and Cycling Action Group, West Sussex County Council and the West Sussex LCWIP Partners Group. It has been produced using LCWIP Technical Guidance published by the Department of Transport in 2017.

The Councils' LCWIP will contribute to achieving and improving on the targets of the Government's Cycling & Walking Investment Strategy, which aims to:

- Double levels of cycling by 2025 (from 2013 base levels)
- Reduce each year the rate of cyclists killed or injured on English roads
- Reverse the decline in walking activity, and increase the percentage of children aged 5-10 who usually walk to school.

The LCWIP also aligns with the West Sussex Walking & Cycling Strategy 2016-26 which aims to: support economic development by facilitating travel to work and services without a car; reduce congestion and pollution by encouraging and enabling people to travel without a car; increase levels of physical activity to help improve physical health; help to maintain good mental health and staying independent later in life; increase the vitality of communities by improving access by bicycle and on foot; and help people to access rural areas and enjoy walking and cycling.

It will do this by taking a strategic approach to improving conditions for cycling and walking, assisting the councils and stakeholders to:

- Identify cycling and walking infrastructure improvements for future investment in the short, medium and long term
- Ensure that consideration is given to cycling and walking within both local planning and transport policies and strategies
- Make the case for future funding for walking and cycling infrastructure

Walking and cycling reduces congestion, greenhouse gas emissions and the adverse links between motorised road transport and health

Here are 200 people in 177 cars

Here are 200 people on bicycles

Source: International Sustainability Institute

Walking and cycling helps reduce obesity

617 THOUSAND

hospital admissions where obesity was a factor

An increase of 18% on 2015/16

1 IN 5

of year 6 children classified as obese

1 in 10 of reception year children classified as obese

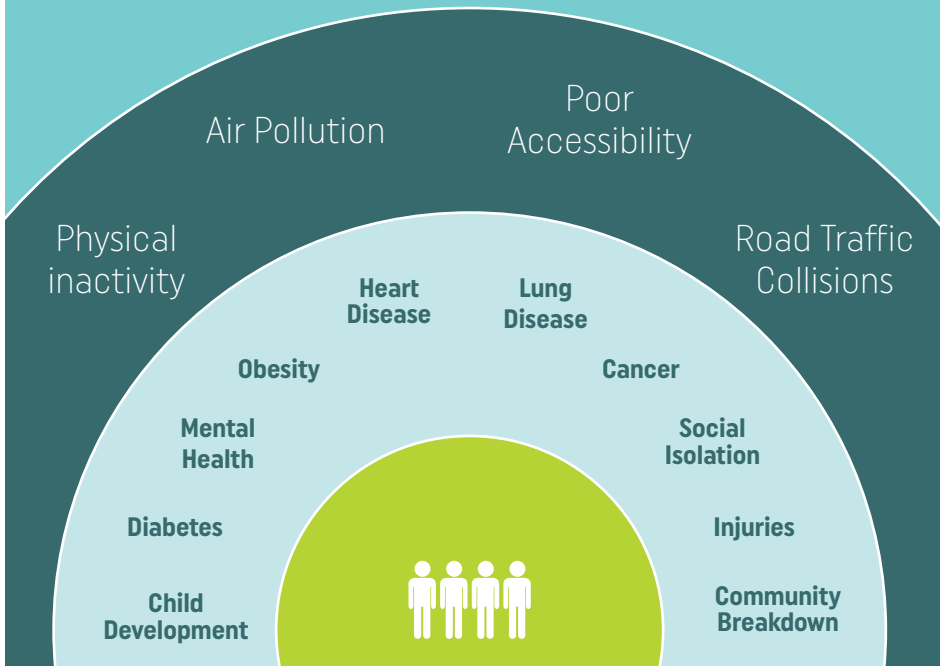
26%

of adults classified as obese

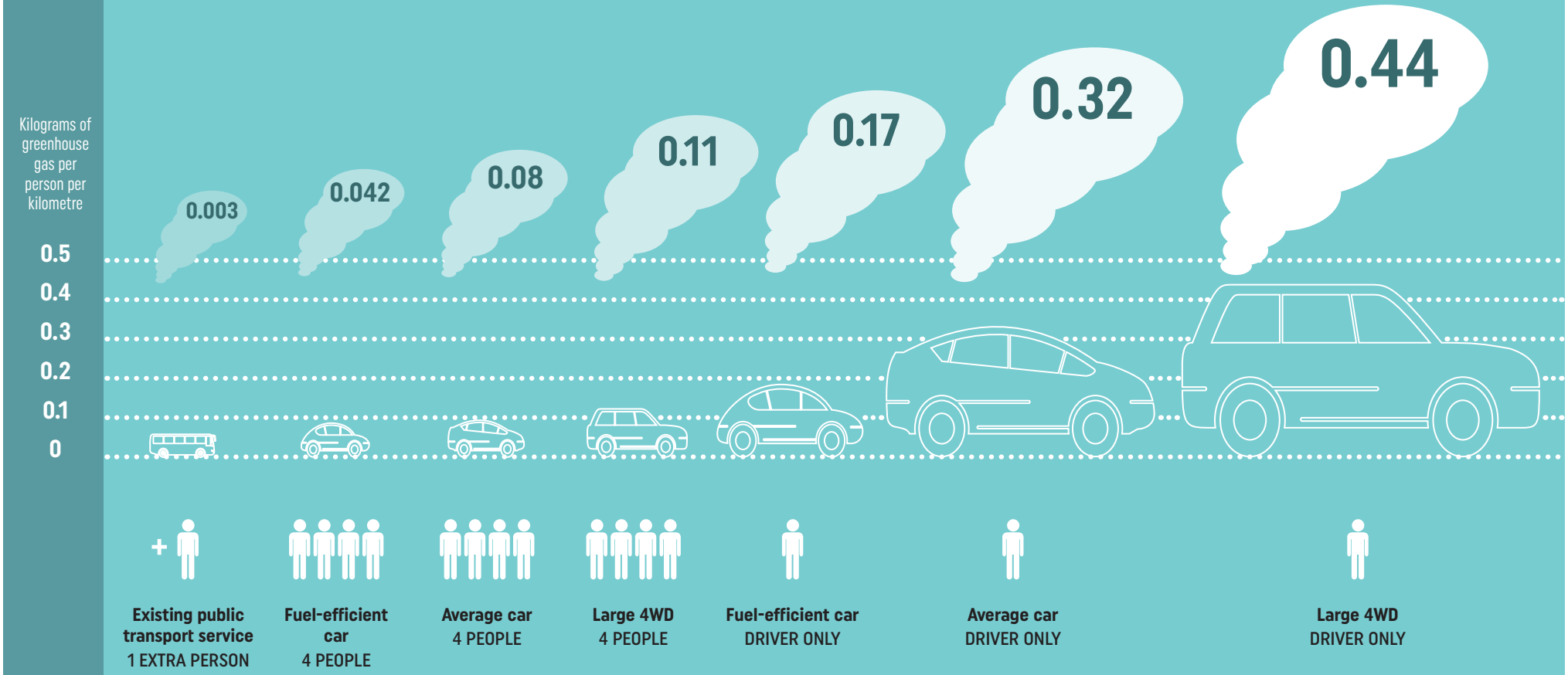
Up from 15% in 1993, but has remained at a similar level since 2010

Source: Statistics on Obesity, Physical Activity and Diet England: 2018

Key adverse links between motorised road transport and health



Greenhouse gas emissions from different forms of transport



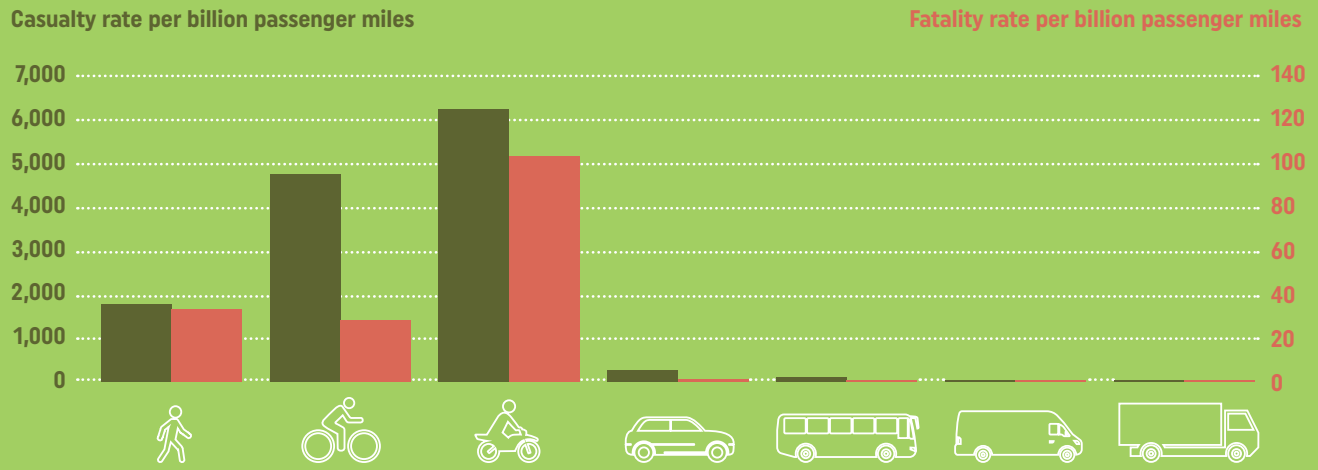
Source: UniSA Sustainable Transport

Doubling levels of cycling by 2025

The number of people cycling is currently very low across England, although in areas like Cambridge and Oxford much higher levels are recorded. Prior to the 1950's, miles cycled were high but between the 1950's to the 1970's this fell dramatically and is only now starting to rise again. Levels are a long way off compared to 1940's levels when 15 billion miles were cycled a year compared to 3 billion now.

The number of cycling trips made per person since 2002 hasn't changed, although people that do cycle are cycling further. A small minority of people in England cycle at least once a week: 11.9% but in Adur and Worthing it's slightly higher at 12.9% and 13.9% respectively (NTS 2017). Trips made by the general public, are just 2% by bicycle, 26% on foot, whilst 61% are made by car.

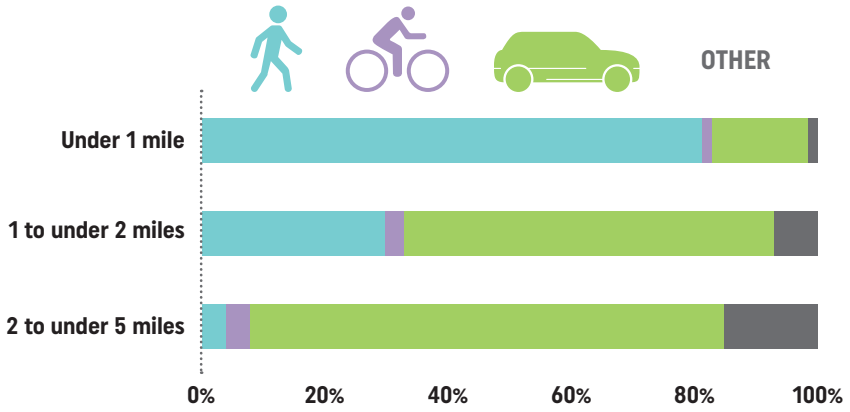
Most people (41%) agree that journeys of less than 2 miles made by car could just as easily be walked (British Social Attitudes Survey). However, whilst 81% of trips under a mile are made by walking, this drops to 30% for trips between 1 and 2 miles; and for trips between 2-5 miles, car and van trips make up the majority share at 60%. (NTS 2017)



Reducing each year the rate of cyclists killed or injured on English roads

People walking or cycling are much more vulnerable on the road than people in cars. It's crucial the roads are made safer for cyclists and pedestrians so people feel confident and safe to use these methods of travelling. Per billion vehicle miles, 1,011 pedal cyclists are killed or seriously injured, in comparison to 26 car drivers. In West Sussex between 2010-14 on average there were 65 cyclists reported killed or seriously injured each year. Most serious accidents involving cyclists in collisions happen at, or near a road junction, with T-junctions being most common and roundabouts being particularly dangerous for cyclists. The severity of injuries suffered by cyclists increases with the speed limit: riders are more likely to suffer serious or fatal injuries on higher speed roads

Source: English 2019 National Travel Survey



Reversing the decline in walking activity

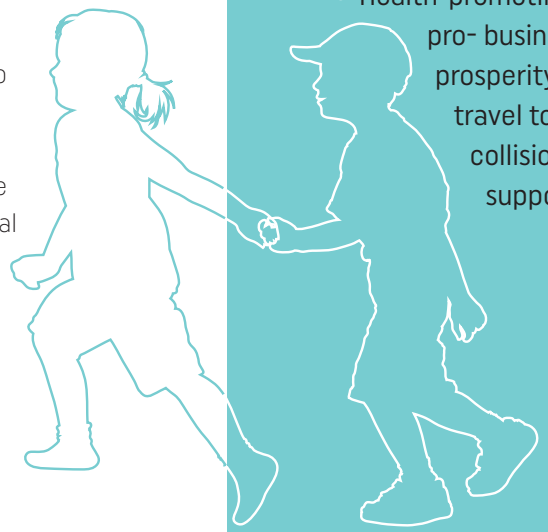
Across England, walking is slowly on the increase. In 2017, the average number of walking stages and the average miles travelled per person per year increased since 2012/13 (2017 NTS). However, only about a third of people walk at least 10 minutes five times a week. In England this is 32%, in West Sussex 33.4%, in Adur 35.5% and in Worthing 36.6%. There has been a significant decrease in West Sussex residents that walked for 10 mins, five times per week, this is down from 46.9% in 2012/13.

Increasing the percentage of children aged 5-10 who usually walk to school.

The number of children walking to primary school is at the lowest figure ever. This is despite a small increase in walking trips for all ages. In the 1970s, 70% of primary school children walked to school, but now only 50% of pupils usually do so. Such a decline impacts on children's health, air quality, traffic congestion and road safety. The proportion of primary school children walking to school in 2017 is the same as it was in 2002 (51%); but the proportion of secondary school children walking to school has decreased from 2002 levels (45%) down to 35% (2017 NTS). Local statistics are not available.

Transport and health impacts

Walking and cycling are good for our physical and mental health. Switching more journeys to active travel will improve health, quality of life and the environment, and local productivity, while reducing costs to the public purse. These are substantial 'win-wins' that benefit individual people and the community as a whole.



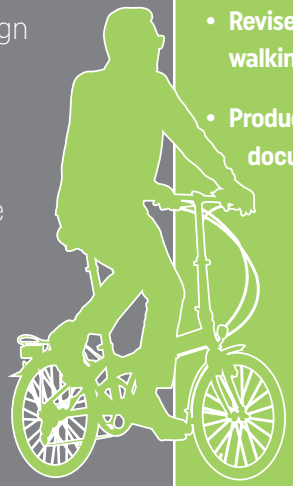
Some key messages from Public Health England on the benefits of Active Travel

- Physical inactivity directly contributes to 1 in 6 deaths in the UK and costs £7.4 billion a year to business and wider society
- Growth in road transport has been a major factor in reducing levels of physical activity and increasing obesity
- Building walking or cycling into daily routines are the most effective ways to increase physical activity
- Short car trips (under 5 miles) are a prime area for switching to active travel and to public transport
- Health-promoting transport systems are pro- business and support economic prosperity. They enable optimal travel to work with less congestion, collisions, pollution, and they support a healthier workforce

What is the LCWIP

Sustrans was commissioned by Adur & Worthing Councils in December 2018 to support the development of a Local Cycling and Walking Infrastructure Plan (LCWIP). The scope of the work was limited to utility trips to work, education and shopping of up to 5km. It does not include consideration of leisure trips outside the urban areas.

Sustrans approach was to review all existing identified schemes and proposals in each of the towns and to plot these on a GIS platform. This was followed by identification of gaps in the network with support from local stakeholders and surveying potential routes on foot and bicycle. The methodology adopted was informed by the Design Guidance published as part of the Active Travel (Wales) Act 2013, the London Cycling Design Standards (first published 2005, latest update 2016) guidance on developing a coherent cycle network and the LCWIP Technical Guidance (published 2017).



Sustrans role was to:

- **Identify new and improved walking and cycling routes for prioritisation**
- **Align with key Council policies and programmes that support local economic growth, improvements to health and well-being and the environment**
- **Engage key local stakeholders**
- **Transport Initiatives then:**
- **Analysed results of consultations**
- **Revised the cycling and walking network plans**
- **Produce the final LCWIP document**

LCWIP Technical Guidance

Under the guidance, the key outputs of LCWIPs are:

- a network plan for walking and cycling which identifies preferred routes and core zones for further development
- a prioritised programme of infrastructure improvements for future investment
- a report which sets out the underlying analysis carried out and provides a narrative which supports the identified improvements and network

This report addresses the first and third outputs, but further work will be needed for the second output. It is intended this will be delivered by WSCC.

The LCWIP process has six stages:

1. Determining Scope

An initial meeting was held with key stakeholders identified by AWC to establish the geographical extent of the LCWIP, and arrangements for governing and preparing the plan.

2. Gathering Information

Identify existing patterns of walking and cycling and potential new journeys. Review existing conditions and identify barriers to cycling and walking. Review related transport and land use policies and programmes.

3. Network Planning for Cycling

Identify origin and destination points and cycle flows. Convert flows into a network of routes and determine the type of improvements required.

4. Network Planning for Walking

Identify key trip generators, core walking zones and routes, audit existing provision and determine the type of improvements required.

5. Prioritising Improvements

Prioritise improvements to develop a phased programme for future investment.

6. Integration and Application

Integrate outputs into local planning and transport policies, strategies, and delivery plans.

Stage 1 was determined by Adur & Worthing Councils who lead on Stages 5 and 6 together with West Sussex County Council. Sustrans was responsible for Stages 2, 3 & 4.

Gathering Information

Comprehensive information and data sources were provided by Adur & Worthing Councils, which was augmented by publicly available datasets from the 2011 Census (e.g. population and employment), DfT Traffic Counts, Road Traffic Accidents, schools, public amenities and previous consultation plans exploring existing and new networks. Review and analysis of the data was undertaken using a bespoke online map created on Sustrans Earthlight platform. The main trip generators were identified and an initial network mapped out to link residential areas with these locations.

A stakeholder workshop was held at an early stage of the process (30 January 2019) to test Sustrans assumptions and to gather useful information from local people. They were asked to identify barriers to walking and cycling, including crossing points of the main barriers (roads, railways, rivers), which form the nodes in the network. Large blank maps were provided for people to draw on, as well as background maps on the local transport network with information on trip generators from the Sustrans GIS database.

The outcomes from this workshop are summarised in the barriers to movement map, which shows existing crossings of the A27, the railway line and River Adur, which are the main barriers in the area. Traffic counts from the DfT have been used to show the major roads in the area, which will need separate provision for walking and cycling due to the high traffic flows.

These crossing points determine the shape of the network to a significant extent, but no new crossings of the railway and the River Adur have been identified at this stage. Crossings of the A27 have been considered by Highways England and WSCC. In particular, the three crossings of the River Adur influence the west-east movement between Sompting, Lancing and Shoreham.

Existing walking and cycling network

The main existing routes comprise National Cycle Network (NCN) Route 2 along the seafront between West Worthing and Hove and the Downs Link (NCN Route 223) on the former railway line between Steyning and Shoreham. Aside from some sections of shared path in the Durrington and Findon Valley areas, there are also some poorer quality routes in Worthing, which comprise narrow advisory cycle lanes on busy streets such as the A259 Goring Road, or the signed routes linking Findon Valley and Worthing station, and Sompting and Worthing town centre, on quieter roads.

There is an extensive Rights of Way network, particularly in the South Downs National Park away from the urban areas. The urban public footpaths do not comprise a comprehensive walking network, although they will be locally useful for trips on foot..

Suggested walking and cycling network

Sustrans was supplied with a number of datasets indicating potential walking and cycling routes, which provided a useful starting point for our network design. This includes a number of routes plotted by local residents as part of a consultation exercise in 2016 managed by the County Council with support from Sustrans and our Route Assessment and Transport Evaluation (RATE) tool. This exercise has informed what has been labelled the "West Sussex Network" as shown on the suggested network map. These routes indicate a reasonably dense network in Worthing and Shoreham, but very little in Sompting and Lancing.

A further dataset of routes supplied by Adur & Worthing Councils from the Adur & Worthing Walking and Cycling Action Group overlaps strongly with the first dataset, but shows a comprehensive dense network across the whole urban area. This was derived from an earlier consultation exercise with local residents and community groups and has been labelled as the "Walking and Cycling Action Group Suggested Network".

85%
of all local people asked support proposed primary & secondary walking zones

Public Consultation on draft LCWIP

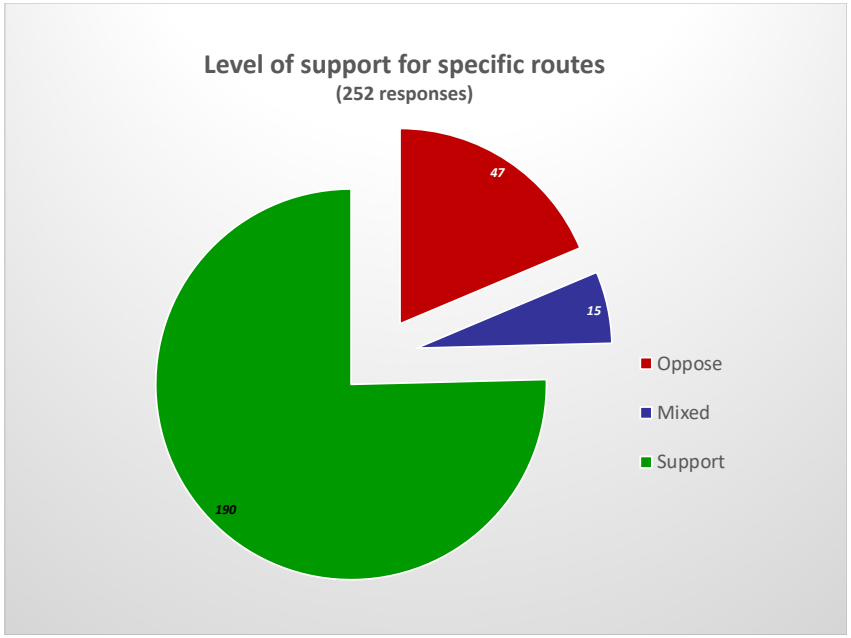
Adur & Worthing Councils carried out an online and local consultation on the draft LCWIP document between November 2019 and January 2020. A total of over 300 responses were received, with the majority strongly supporting improvements to cycling and walking infrastructure.

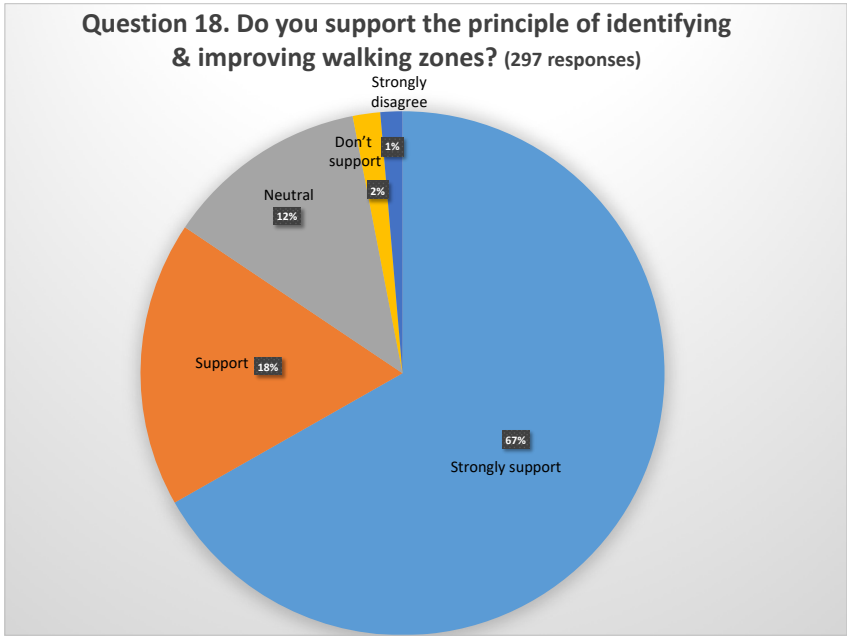
296 online responses were received from individuals, with 17 individuals responding by letter. In addition 18 local community and residents groups responded by a mix of letter and online. This is a high level of response compared to similar types of consultations. A full analysis has been undertaken of the individual questionnaire responses which is available via the Adur & Worthing Councils' website.

Key findings from respondents:

- 89% support the principle of improving the cycle network and only 5% opposed it
- 85% support the principle of identifying and improving walking zones and only 3% opposed it
- If the proposed LCWIP measures were implemented 67% said they would definitely cycle more (only 14% said they would not) and 51% said they would definitely walk more (12% not)
- 75% supported one or more of the proposed routes and only 20% opposed a route.
- The strongest support was for the coastal route 200, the inland east-west route 210, route 204 through Shoreham and route 310 through Worthing
- A number of issues were raised regarding proposed cycling and walking routes - these have been addressed in the final proposed network

Both the level of response to the consultation and the level of support that was expressed for improving the cycling and walking networks and infrastructure is very encouraging. There was also considerable support for many of the key routes proposed in the network. This is a solid base of support on which to build the measures set out in the LCWIP.





Trip generators

An important starting point in designing a walking and cycling network is to determine the likely origin and destination points for everyday trips to work, school, shopping and leisure. The two trip generators maps in the following pages give a visual indication of these destinations, including: employment areas, secondary schools, shopping areas, hospitals, leisure or sports centres. Future development sites give an indication of potential future transport demand.

There is a significant concentration of trip generators in both town centres, especially retail and employment, but there are also large employment sites at West Durrington, Goring, Broadwater and South Lancing. Secondary schools are dispersed across the whole area, but with some concentration in central Worthing. Leisure and sports centres are also dispersed across the whole area.

Population densities are generally higher in central areas and more dispersed further out, which suggests that short trips are likely to be concentrated in these central areas. However, all residential areas are within 5km of most destinations, providing a strong argument in favour of a comprehensive walking and cycling network across the whole urban area.

Propensity to Cycle data

The cycle commute map for Worthing based on census 2011 flow data indicates that Worthing town centre is an important destination, with flows radiating to all parts of the town. The coastal cycle route appears to be well used and there is a strong flow between West Durrington and the town centre. The existing 2011 cycle flows in Adur are much lower and it is difficult to draw any conclusions from this data. It should be noted that commuting is only 14% of all trips nationally.

The school travel map for Worthing shows strong flows in the vicinity of the secondary schools in the central area and weaker but significant flows throughout the urban area, mostly away from the town centre. The Census 2011 school travel map for Adur indicates a number of existing flows that could form the basis of a network, albeit at lower demand levels than for Worthing. It should be noted that education and escort to education is only 13% of all trips nationally.

We have also analysed the short car trips under 5km for journeys to work, on the basis that these might reveal the potential for modal shift towards walking and cycling. These show strong flows into the two town centres, but also significant flows within the main urban areas of Worthing, Sompting & Lancing and Shoreham. Flows between these three areas are much weaker, probably reflecting the greater actual road distances involved. This map suggests that there is good potential for modal shift across the whole urban area.

Commuting, education and escort education trips only account for 27% of all trips in England, so there is a danger that too much weight is given to these types of trip, because the data is readily available from the Census 2011. Shopping accounts for 18% of all trips and leisure 22% so arguably we should focus on these trips, but unfortunately there is limited data available. The full breakdown from the National Travel Survey of English residents published in July 2019 is shown in the table below:

Journey purpose	Annual trips	Percent
Commuting	188	14.16%
Business	43	3.27%
Education	94	7.04%
Escort education	80	6.00%
Shopping	245	18.42%
Other escort	116	8.76%
Personal business	130	9.75%
Visit friends at private home	127	9.58%
Visit friends elsewhere	70	5.26%
Sport / entertainment	99	7.48%
Holiday / day trip	61	4.57%
Other including just walk	76	5.71%
All	1,329	

Network planning for cycling

There is a wealth of information to consider when planning a cycle network for Adur and Worthing, as described above. Our approach was to work through all the data, switching layers on and off within our GIS mapping system to test the emerging network. The sequence below reflects the series of maps on the following pages:

LCWIP ref	Map ref	Analysis	Recommendations
5.40	Barriers to movement	Crossing points and major roads	New crossings if required
4.4	Existing walking and cycling network	Quality, value for local journeys	Improvements if required
4.5	Suggested walking and cycling network	Value for local journeys	Add or remove routes if required
5.9	Trip generators	Map all important origins and destinations	Ensure the network swerves all major destinations
4.8	Propensity to Cycle Tool (cycle commute, cycle to school and short car trips)	Existing trips and modelled increases	Design network to accommodate the major flows
5.23	Proposed walking and cycling network	Test against core design outcomes	Improvements if required

The proposed network largely coincides with the "West Sussex Network" and the "Walking and Cycling Action Group Suggested Network", but is a less dense network than either of these datasets. We have taken the advice in para. 5.21 of the LCWIP Technical Guidance that "it will take time to develop a network with a tight density, and wider mesh widths of up to 1000m would be expected within the initial phases of the network's development". Further routes can be added at a later stage to create a denser network, but our advice is to start with fewer routes and implement them to a high standard. The proposed network is denser within the central areas of both Districts, closer to the ideal density of 400m between routes.

The primary routes are judged to be the most popular and strategic routes, linking residential areas with the key trip generators. Secondary routes can be locally important but are less strategic as they fill the gaps in the primary network. Some sections of secondary routes may have higher flows than parts of the primary routes, so the distinction between primary and secondary is not a reliable guide to investment priorities.

The proposed network has been visually tested against the Propensity to Cycle data and there is a high degree of correlation between the two networks, with all the major employment sites and secondary schools served by the proposed network as shown on the map. The proposed network also serves the main shopping areas, hospitals, leisure or sports centres and development sites.

The Route Selection Tool has been used to assess Route 201 between Ferring and Worthing town centre as an example of the use of this tool, which is part of the LCWIP technical guidance (see Appendix).

Trip generators and key constraints have been identified for each route and summarised in a table before the proposed network maps. Some of these constraints may not be possible to resolve, so alternative routes may need to be considered.

Network planning for walking

We have assumed that the trip generators for walking are the same as those for cycling, albeit that shorter distances will be involved (less than 2km). The proposed cycle network provides a suitable framework for walking trips, although it is recognised that a much finer-grained network is required for walking since most streets have footways. When the cycle network is designed, it will be vital to ensure that people on foot do not have a reduced level of service, for example no existing footways to be converted to shared use without widening. All crossings on the cycle network must accommodate people on foot and on bikes.

We have identified primary and secondary walking zones, with the two town centres as the primary zones. The secondary zones are based on local shopping centre locations as defined by the local authority. The LCWIP Technical Guidance (para 6.15) suggests that core walking zones should have a minimum diameter of 400m, so we have extended the zones out from the boundaries given by the local authority to account for this. Key walking routes should extend up to a 2km radius from the core walking zones, as shown by the buffer on the map. As a first approximation, we have assumed that the cycle network within this 2km radius will comprise the key walking routes.

The main gateways into Worthing and Shoreham town centres have been identified and these are described in the following pages. All walking routes within the core walking zone should be audited, but that is beyond the scope of this report.

Door to door journeys

In addition to planning for local trips on foot and by bike, it is important to ensure that longer distance journeys are made as easy as possible by integrating walking and cycling networks with public transport interchanges.

The concept of the "door-to-door" journey was introduced by the Campaign for Better Transport in 2011, leading to the publication of a Government door to door strategy in 2013. The emphasis is on access to public transport interchanges at both ends of the journey – perhaps walking or cycling from home to the train station, then picking up a hire bike to the final destination.

The government strategy focuses on four areas:

- Accurate, accessible and reliable information about the different transport options for their journeys;
- Convenient and affordable tickets, for an entire journey;
- Regular and straightforward connections at all stages of the journey and between different modes of transport
- Safe, comfortable transport facilities.

As most public transport journeys involve a mode change, interchange between these is very important. Users do not want to have to go out of their way to access the next mode. It also needs to be clearly signed, passengers often have short connection times so need reassurance they will be able to locate their next waiting time within their time frame.

Larger interchanges, such as train station to bus station, should also have facilities appropriate to usage. If there is shelter from the elements, a safe place to wait and possibly additional facilities such as a coffee shop then wait times can seem shorter than they actually are. It is also very useful to provide real- time information at interchanges.

Where users are not taking a motorised form of transport to access or exit their next mode of transport then interchange is still as important. Cycling facilities needs to be safe and secure and in an accessible place for changing modes quickly. This is the same for bike hire facilities. Walking and cycling routes need to be well signed giving distances and potentially times to key destinations. Provision for taxis, good pedestrian access and, where appropriate car parking, also need to be made.

Implementation

The inclusion of a route in the network plan is no guarantee that it will be implemented. While we have made every effort to ensure that our proposals are practical, it has to be recognised that there are competing demands for highway space and further feasibility and detailed design work will be necessary. In some cases, this may mean that a route is moved to an alternative parallel alignment.

It should be noted that this report is not a feasibility study, but a high level assessment, and all proposals would need to be subject to further feasibility work, then detailed design development and consultation in due course. We recognise that there are other competing demands for road space, including cars, buses, taxis and parking. Proposed road space reallocations for walking and cycling will need to carefully consider implications across all modes, although the ultimate aim must be to reduce the dominance of motor vehicles, thereby easing congestion.

If schemes are to be progressed, they will need to be prioritised for inclusion in delivery programmes alongside other proposals, with schemes subject to the appropriate level of business case development.

Propensity to Cycle Tool Scenarios

PCT is an open source transport planning system, part funded by the Department for Transport. It was designed to assist transport planners and policy makers to prioritise investments and interventions to promote cycling. More information is available from the PCT website: www.pct.bike/m/?r=west-sussex

The aim of the PCT is to inform planning and investment decisions for cycling infrastructure by showing the existing and potential distribution of commuter cycle trips and therefore inform which investment locations could represent best value for money. PCT uses two key inputs:

- Census 2011 Origin and Destination commuting data (O-D data)
- Cycle Streets routing

The model estimates cycling potential adjusted for journey distance and hilliness as well as predicting the likely distribution of those trips using the Cycle Streets routing application.

The model can be applied to consider different scenarios such as: Gender Equality, where women cycle as frequently as men; Go Dutch, if cycling levels were the same as in the Netherlands; and, Government Target, where cycling levels meet the target for current government's aim for cycling.

There are a number of limitations to this model which should be considered especially when making decisions based on the patterns shown. These limitations include the data only showing travel to work and school trips, therefore only 27% of all journeys. Travel to shopping and for leisure is not included. The data also misses out the minor stages of multi-stage commuter trips so cycle journeys to train stations and bus stops are not represented. Lastly the distribution of journeys is a prediction of the likely route taken based on the Cycle Streets routing algorithm and not the actual routes being used.

It is worth noting that whilst the model builds an assessment of cycling propensity, it does not segment potential users, or provide any insight into people on foot. Although this model does provide planners with an overview to identify areas for appropriate investment for cycling trips to work, it does not provide further information on those potential cyclists and their personal attributes and behaviours to help design the most effective interventions.

The first map shows current levels of cycling to work, which are above average in Worthing. The second map shows the Government Target scenario, which indicates a modest increase in commuter cycling trips.

The third map shows the "Go Dutch" scenario, which indicates that a significant proportion of commuter trips could be made by bike.

While the Government Target scenario models relatively modest increases in cycle commuting, the Go Dutch scenario is an ambitious vision for what cycling in England and Wales could look like. People in the Netherlands make 28.4% of trips by bicycle, fifteen times higher than the figure of 1.6% in England and Wales, where cycling is skewed towards younger men. By contrast in the Netherlands cycling remains common into older age, and women are in fact slightly more likely to cycle than men. Whereas the cycle mode share is 'only' six times higher in the Netherlands than in England for men in their thirties, it is over 20 times higher for women in their thirties or men in their seventies.

The Go Dutch scenario represents what would happen if English and Welsh people were as likely as Dutch people to cycle a trip of a given distance and level of hilliness. This scenario thereby captures the proportion of commuters that would be expected to cycle if all areas of England and Wales had the same infrastructure and cycling culture as the Netherlands.

We have created a series of maps based on data available on the PCT website, which are displayed on the following pages:

- Commuter and school travel area data for West Sussex, based on the Census 2011, Government target and Go Dutch scenarios
- Commuter route data for Worthing and for Adur, based on the three scenarios
- School route data for Worthing and for Adur, based on the three scenarios
- Commuter short car trips based on Census 2011 data

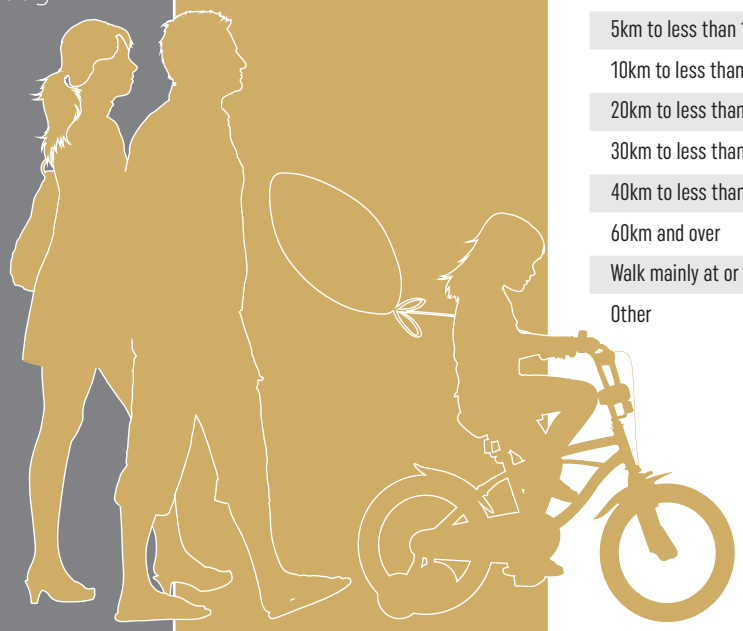
Adur and Worthing

This is the first Joint Local Cycling and Walking Infrastructure Plan (LCWIP) for Adur & Worthing councils. It supports the development of safe routes for cycling and walking and will increase the uptake of active and sustainable travel modes throughout Adur and Worthing.

The Councils' Public Health Strategy 2018 - 2021 sets out five priorities for action. Priority 2 seeks to contribute to improved environmental sustainability. The Councils have a key role in improving environmental resilience in Adur and Worthing through developing sustainable transport opportunities, creating the opportunities and networks for communities to walk and cycle safely, managing local air quality, using innovation, planning and design and supporting the network of environmental community groups in our areas.

The vision underpinning this LCWIP is:

To create a place where walking and cycling becomes the preferred way of moving around Adur and Worthing.



The Covid-19 impact

The current Covid-19 crisis will undoubtedly significantly change patterns of work with many people working closer to or from home once it has passed. However, it may be some time before a clear picture of the level of change emerges. Despite this, existing data from the 2011 census suggests that prior to the crisis there was significant potential to increase walking and cycling to work, particularly in Worthing where 48% had a work journey of 5km or less compared to 35% in England and 33.2% in West Sussex overall. The figure for Adur is 33.5%.

The table below shows the figures for all work journeys and distances.

Length of Journeys	Adur District	Shoreham -by-Sea	Worthing Borough	West Sussex	South East	England
Less than 2km	16.6%	17.4%	24.9%	17.7%	16.6%	16.6%
2km to less than 5km	16.9%	12.7%	23.1%	15.5%	16.2%	18.4%
5km to less than 10km	20.2%	24.7%	6.8%	13.1%	14.2%	17.3%
10km to less than 20km	12.3%	9.9%	10.9%	14.5%	13.7%	15.3%
20km to less than 30km	3.8%	3.8%	5.6%	5.9%	7.1%	5.7%
30km to less than 40km	3.8%	4.6%	2.5%	3.1%	3.7%	2.6%
40km to less than 60km	1.3%	1.4%	2.2%	5.2%	4.0%	2.3%
60km and over	4.4%	5.7%	4.6%	4.0%	4.0%	3.1%
Walk mainly at or from home	10.2%	12.4%	10.4%	12.2%	11.8%	10.3%
Other	10.4%	12.1%	9.0%	8.9%	8.9%	8.5%

Air Quality

Issues of poor air quality within Adur and Worthing are primarily a result of traffic emissions. In Adur, two Air Quality Management Areas (AQMAs) have been declared at Shoreham High Street and Old Shoreham Road, Southwick. The Brighton (Portslade) AQMA borders the district boundary. Adur has an Air Quality Action Plan (2007) (under review). In Worthing, there is one AQMA which encompasses Offington Corner (A27/A24 junction), Grove Lodge and Lyons Farm (A27 Upper Brighton Road). Worthing has an Air Quality Action Plan (2015) (due for review in 2020). Both Councils use the Sussex Air Quality and Emissions Mitigation Guidance 2019 to assist with assessing and mitigating the air quality impacts of new local development.

A new Sussex-air project has been funded for 2020/21 to expand the previous work with primary schools close to AQMAs to encompass additional primary schools and extend the work to some secondary schools across Sussex. Adur & Worthing Councils also works with West Sussex County Council Inter Authority Air Quality Group to improve air quality whilst promoting behaviour change.

Measured levels of nitrogen dioxide (NO2) fell during 2019, although a single monitoring site close to Grove Lodge roundabout continued to exceed the 40 µg/m3 annual mean objective for NO2 in 2019. No monitoring sites in Adur exceeded the annual mean objective in 2019. Due to continued reductions in NO2 levels at Southwick, Adur & Worthing Council plans to revoke the Southwick AQMA. Monitoring of particulates in both Adur (PM_{10}) and Worthing ($PM_{2.5}$) show the relevant objectives currently being met.

Carbon Emissions

Adur and Worthing Councils are committed to work towards becoming a Carbon Neutral council by 2030. The Councils have also committed to the UK100 Cities pledge to achieve 100% clean energy across Adur and Worthing by 2050. Emissions from transport will be calculated under the Carbon Reduction Plan and monitored annually. The declaration states: "Actions will include virtually eliminating carbon emissions from council energy and transport use through almost entirely ceasing fossil fuel use", with a "shift to electric vehicles".

Carbon emissions in Adur and Worthing have been decreasing since government monitoring began in 2005. Between 2005 and 2017, per capita annual emissions have reduced from 5.9 to 3.6 tonnes CO_2 in Adur and 5.6 to 3.1 tonnes CO_2 in Worthing. Whilst this is good news, looking in greater detail, domestic and industrial/commercial emissions have been steadily falling, but transport emissions are now higher than in 2012. As transport emissions make up over one third of carbon emissions from Adur and Worthing, reducing them is crucial in the effort to become carbon neutral.

The Covid-19 crisis has seen reduced levels of NOx air pollution and carbon emissions and it remains to be seen what the longer term outcome for both will be once the crisis has passed. However, maintaining changes ion travel that have occurred is another strong reason for ensuring that the measures in the LCWIP are implemented as quickly as possible.

West Sussex County Council

As the Highway Authority the County Council is a critical stakeholder responsible for the majority of the roads in the area.

The West Sussex Transport Plan 2011- 2026 provides strategic direction for transport within Worthing and Adur, focusing on promoting economic growth; tackling climate change; providing access to services; employment and housing; and improving safety, security and health. The Plan seeks to ensure that all new development within West Sussex supports and contributes to increasing the use of sustainable modes of transport ('smarter choices'). Enabling more people to walk, cycle or use public transport will help to reduce costs associated with traffic congestion as well as creating healthier, inclusive and attractive places to live and work.

The West Sussex Walking and Cycling Strategy (2016-2026) includes over 300 potential new routes that were suggested by local stakeholders. These can be divided into four categories:

Inter-community utility cycle routes

Inter-community leisure cycle routes

Urban cycle improvements

Walking-only schemes

The County Council has stated it will prioritise investment in inter-community utility cycle routes and urban cycle improvements. With the advent of LCWIPs the County Council has undertaken to focus on routes that connect places and to use the LCWIP process to develop business cases for such routes. This will complement the work of the district and borough councils, who are focussing on routes within their local areas. In addition, the South Downs National Park Authority is looking at routes that connect into the National Park. Once the LCWIP work has been completed the County Council will review the potential routes listed in the West Sussex Walking & Cycling Strategy and reprioritise these as appropriate.

Predating development of the LCWIP, the County Council has already started to investigate improvements to walking and cycling facilities in Adur and Worthing through Area Sustainable Transport Package (STP) feasibility studies and Road Space Audits. These aim to support planned development and economic growth. The County Council and Adur & Worthing Councils are working together to ensure this work dovetails with LCWIP development. Routes that are being explored under the STP work are identified on the proposed primary and secondary cycling routes in this document.

South Downs National Park

South Downs National Park Authority (SDNPA) published their Cycling and Walking Strategy 2017- 2024 with an ambition that:

- The National Park is home to a network of largely traffic free routes providing opportunities for a range of users of differing abilities and ages, who are using the network for recreation and daily utility journeys.
- The network is easily reached from all communities within and near to the National Park and is well connected to public transport.
- Visitors and residents enjoy excellent cycling and walking recreational facilities and information throughout the National Park on trails, at visitor attractions, amenities and accommodation providers.

The Vision Map of Strategic Routes and Promoted Trails identifies three strategic routes linking the National Park with Adur & Worthing:

- Worthing to Washington, along the A24 corridor
- Downs Link, Shoreham to Steyning
- Mill Hill, Shoreham to the South Downs Way

89%

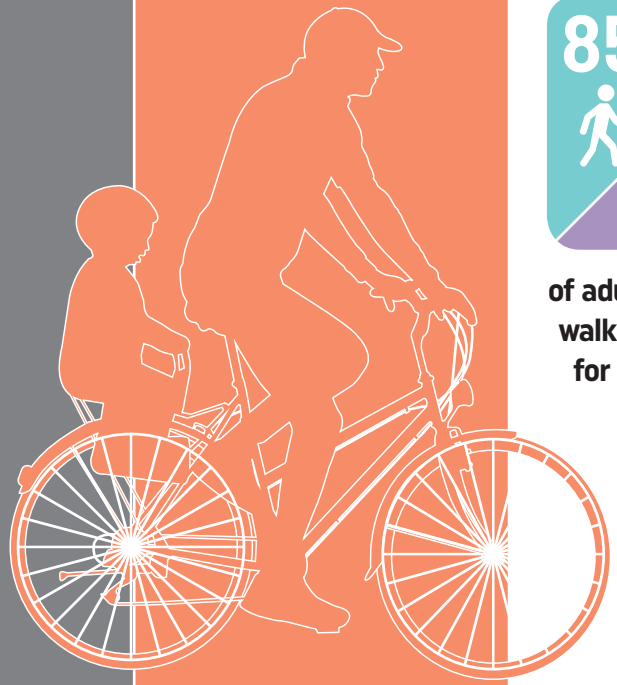
of all local people asked support improving the cycling network

Worthing Borough

Worthing is one of the largest towns in West Sussex bordering Adur District to the east and Arun District to the north and west. Some of the northern parts of Worthing Borough are within the SDNP, including Cissbury Ring. Worthing is a compact town and the Built-up Area takes up over 2,282 hectares of the borough's geographical area (3.369 ha). The population of Worthing Borough was 110,025 in 2018.

The vision underpinning this LCWIP is:

To create a place where walking and cycling becomes the preferred way of moving around Adur and Worthing.



Cycling & Walking in Worthing

Department for Transport Statistics for 2017/18 reveals that within the borough of Worthing:

ONCE A MONTH

85% 18%

of adults undertake walking or cycling for any purpose

ONCE PER WEEK

76% 13%

of adults undertake walking or cycling for any purpose

FIVE TIMES A WEEK

34% 5%

of adults undertake walking or cycling for any purpose

These figures are higher than the West Sussex average

Worthing has the highest walking and cycling statistics for these measures out of the all Districts and Boroughs in West Sussex

The current provision of pedestrian and cycling facilities across the town are unable to support and maintain sustainable travel. Much of the network is disjointed and suffers from inadequate signing, unsafe crossing points and poor surfacing. However, the NCN2 cycle route along the seafront is the most popular cycle route in West Sussex, with a weekday average of over 637 cyclists recorded near to Brooklands Park in 2018, indicating that there is great potential to grow active travel in the Borough.

National Cycle Network (NCN) Route 2 runs through Sussex from Worthing to Rye. In Worthing NCN2 uses a shared route with pedestrians along the promenade, which currently ends at George V Avenue in West Worthing.

There is also a cycle route from Worthing railway station to Findon Valley in the north, which is on a shared path north of the A27, but largely an on-road signed route to the south towards the town centre. There are sections of shared use path along the A2032 Littlehampton Road to the west of the Borough, however these do not provide a continuous route towards central Worthing. There are additional largely on-road signed cycle routes from Goring Road in the west and Sompting to the north east, which link to the town centre.

There is a pedestrian zone in the centre of Worthing as well as footways that extend across most of the local road network including the A27. This provides users with access on foot across the urban area and to towns and villages in the near vicinity as well as into the South Downs National Park.

Planning Policy Context

The Worthing Core Strategy, adopted 2011, recognises that car ownership in Worthing is slightly higher than the national average and, like most urban environments, the town is characterised by areas of heavy road congestion, especially during morning and evening peaks. This is especially prevalent around the northern edge of the town, where the A27 provides Worthing's only long distance through route. The A24 provides the main road link into the town from the north. The A259 coast road that connects Worthing to centres at Lancing and Shoreham-by- Sea to the east and Littlehampton to the west, also experiences significant peak time congestion.

Strategic Objective 7 of the Core Strategy seeks to:

"Improve accessibility and to ensure that a sustainable transport network is provided that is integrated with new development and promotes a modal shift towards more sustainable modes of transport."

The Core Strategy seeks to deliver sustainable transport through Policy 19: Sustainable Travel to improve walking and cycling networks to create sustainable links between the town centre and the suburbs.

Worthing Borough Council is developing a new Local Plan for Worthing, targeted for adoption by summer 2021. The draft sets out to improve connectivity and promote a more integrated and sustainable transport network as well as facilitate improved opportunities for active travel. To achieve this, the Local Plan seeks to locate and design development and supporting infrastructure to minimise the need to travel by car and promote sustainable travel, to:

- **Provide an integrated, safe and sustainable transport system** to improve air quality, reduce congestion & promote active travel. Strategic Objective 20
- **Promote the creation of strong, vibrant and healthy communities** and seek a reduction in health inequalities through the enhancement and accessibility of safe active travel routes. Policy CP7 Healthy Communities
- **Promote opportunities for active transport and accessible and well-connected walking, cycling and public transport;** ensure potential impacts of development on transport networks are addressed; and to reduce poor air quality. Policy CP24 Transport

It is currently estimated that approximately 4,000 additional dwellings and 100,000m^2 employment sites will be built by 2033. Given the need to mitigate the transport impacts arising from the level of growth, it is vital that a functional and sustainable transport system is in place.

The Worthing Infrastructure Delivery Plan (IDP) identifies infrastructure requirements needed to support future growth which includes walking and cycling. The IDP is a live document and will be updated in tandem with the preparation of the Worthing Local Plan. The IDP and this LCWIP will complement each other.

To inform and support the development of the new Worthing Local Plan, the Council commissioned the Worthing Local Plan Transport Assessment which demonstrates the traffic implications of potential new land use development and identifies an associated package of transport improvements.

Worthing existing barriers & crossings

DfT Traffic 2016 Traffic Counts

Total Vehicle Average Daily Flow (AADF)

- 0-5000
- 0-5000 - 10,000
- 10,000 +

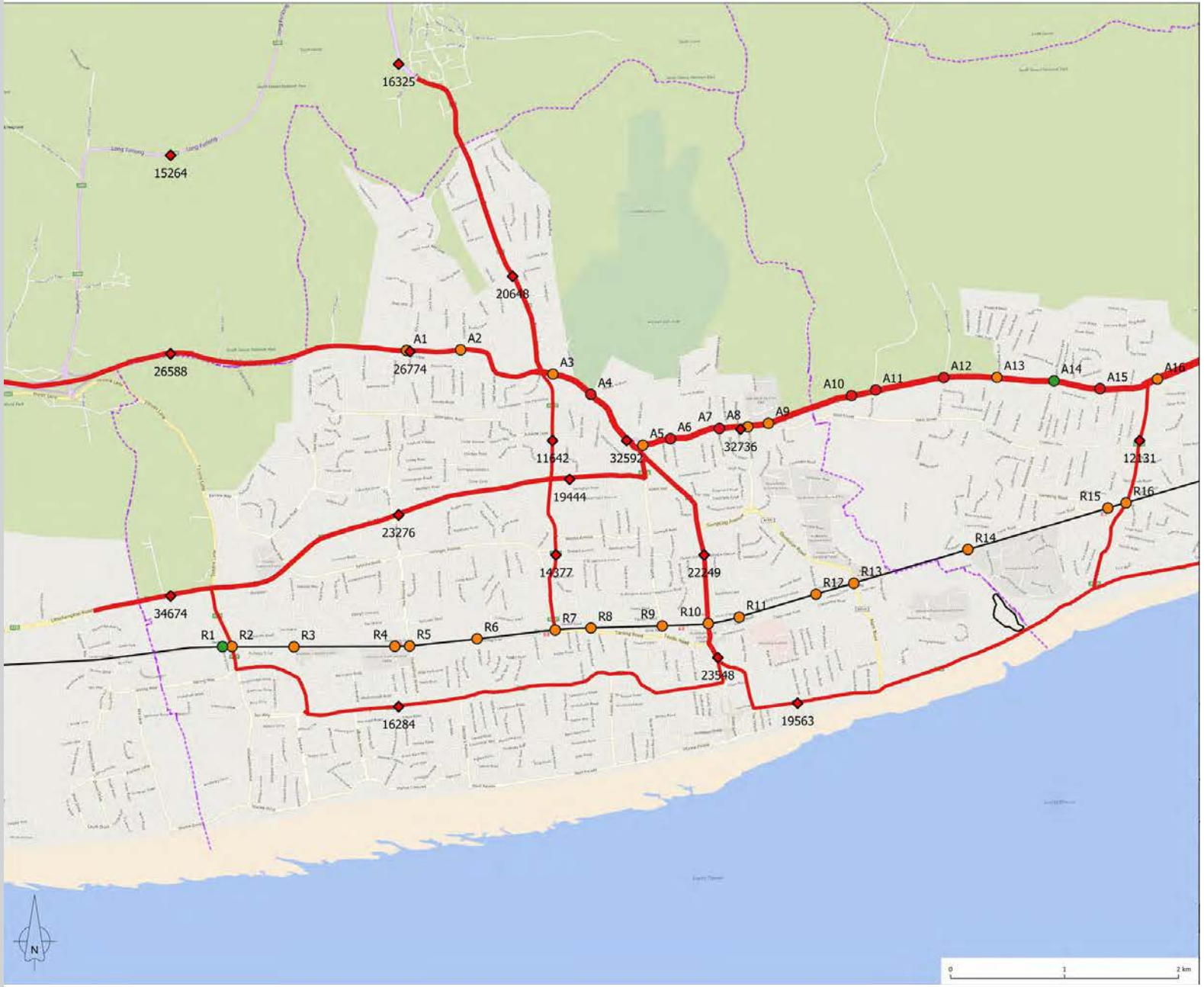
Road Barriers

Traffic Volumes

- 10,000 - 20,000
- 20,000 - 30,000
- 30,000 - 40,000
- 40,000 +

Barrier Crossing Point Quality Rating

- Green
- Amber
- Red
- 10,000 - 20,000
- 10,000 - 20,000



Worthing trip generators and local attractors

Employment

2011 Census Workzones

Density of Employment (Jobs per Hectare)

- 20-50
- 50 +

Population

2011 Census Population Density
(People per Hectare)

- 0-50
- 50-100
- 100+

Trip Generators

Retail

- Shopping Areas

Services

- Hospital

Leisure

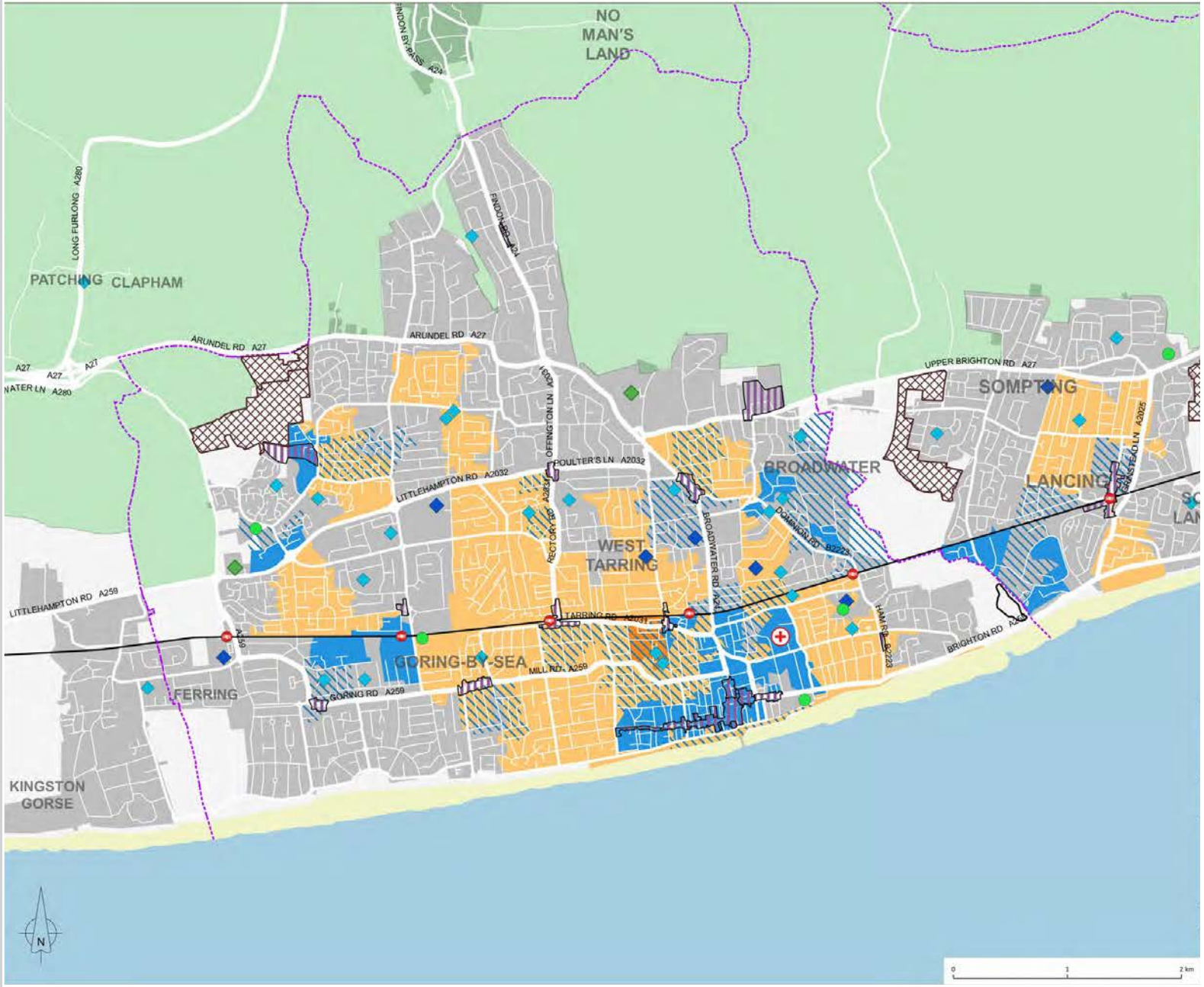
- Leisure or Sports Centre

Schools

- Primary School
- Secondary School
- Further Education
- Future Development Sites

Other

- Administrative Boundary
- South Downs National Park



81%
of all local people asked would cycle more if routes were made safer and easier

Adur District

Adur District covers Shoreham-by-Sea, Southwick, Fishergate, Lancing and Sompting. It is located on the south coast between the Sussex Downs to the north and the English Channel to the south. It borders Worthing to the west, Horsham District to the north and Brighton & Hove to the east. The population of Adur was 63,689 in 2018. Over half of Adur District (53%) lies within the National Park boundary, although the population in this area is very low.

Cycling and Walking in Adur

Department for Transport Statistics for 2016/17 reveals that within the district of Adur:

ONCE A MONTH

83%

19%

of adults undertake walking or cycling for any purpose

ONCE PER WEEK

74%

13%

of adults undertake walking or cycling for any purpose

FIVE TIMES A WEEK

36%

3%

of adults undertake walking or cycling for any purpose

The cycle infrastructure in the district includes National Cycle Network (NCN) Route 2. Improvements to a section of the NCN2 route through the District are being developed under the Sustainable Transport Package (STP) work by WSCC. The recently constructed Adur Ferry Bridge, provides a new shared pedestrian and cycle crossing, that links Shoreham with Shoreham Beach and which forms part of NCN 2.

These figures are higher than the West Sussex average

The 'Downs Link', a 37 mile bridleway, runs along the River Adur from Shoreham (mostly traffic free) to Guildford. There are other unconnected sections of cycle facilities in Adur, for example on Upper Shoreham Road between Buckingham Road and Eastern Avenue, and at the Upper Shoreham Road Holmbush Roundabout.

The Monarch's Way long distance footpath passes through Adur District connecting Hove with Shoreham Harbour, following NCN2 along Basin Road South. Signage along the final stretch of the route is non- existent, and improvements could be made to the route in this area. There are many footpaths/public rights of way leading from the urban parts of Adur into the countryside to the north.

The main local transport route running east – west (the A259) is a poor environment for pedestrians and cyclists. The road is busy, noisy and dusty with HGV and minerals / waste uses along the frontage and being characterised by poor public amenity, although it is subject to redevelopment proposals including STP improvements to the NCN2 cycle facilities. The A270 (Old Shoreham Road) is an alternative route but this is also blighted by high volumes of traffic, an Air Quality Management Area (AQMA) and an unwelcoming environment.

Planning Policy Context

The Adur Local Plan adopted in 2017, is a strategy for development in Adur (excluding the SDNP) up to 2032. One of the key issues identified is the need to address road congestion and related air and noise pollution whilst improving the existing transport network and facilitating the development of sustainable transport measures. Roads particularly affected include the A27, A259 and the A270. This, along with anticipated future development, could worsen congestion and lead to poorer air quality by 2032, especially in the AQMAs, unless measures are taken to mitigate these impacts and encourage modal shift. Objective 9 of the Adur Local Plan is:

"To improve connectivity within and to Adur's communities as well as to Brighton and Worthing, achieve more sustainable travel patterns and reduce the need to use the private car through public transport services and infrastructure, demand management measures, and new and enhanced cycle and footpaths."

Adur Local Plan's policies seek to promote opportunities for active transport and accessible and well-connected walking, cycling and public transport; ensure potential impacts of development on transport networks are addressed; and to reduce poor air quality.

Over the period of the Local Plan to 2032 it is anticipated that over 3,700 dwellings will be delivered along with over 40,000 m^2 of employment land.

The Adur Infrastructure Delivery Plan (IDP) identifies infrastructure requirements including for walking and cycling needed to support future growth identified in the Adur Local Plan. This LCWIP will also link up with the IDP. The Adur Local Plan was also informed by the Adur Local Plan and Shoreham Harbour Transport Study 2013, the Report Addendum 2014 and Second Addendum 2016.

Adur existing barriers & crossings

DfT Traffic 2016 Traffic Counts

Total Vehicle Average Daily Flow (AADF)

- 0-5000
- 0-5000 - 10,000
- 10,000 +

Road Barriers

Traffic Volumes

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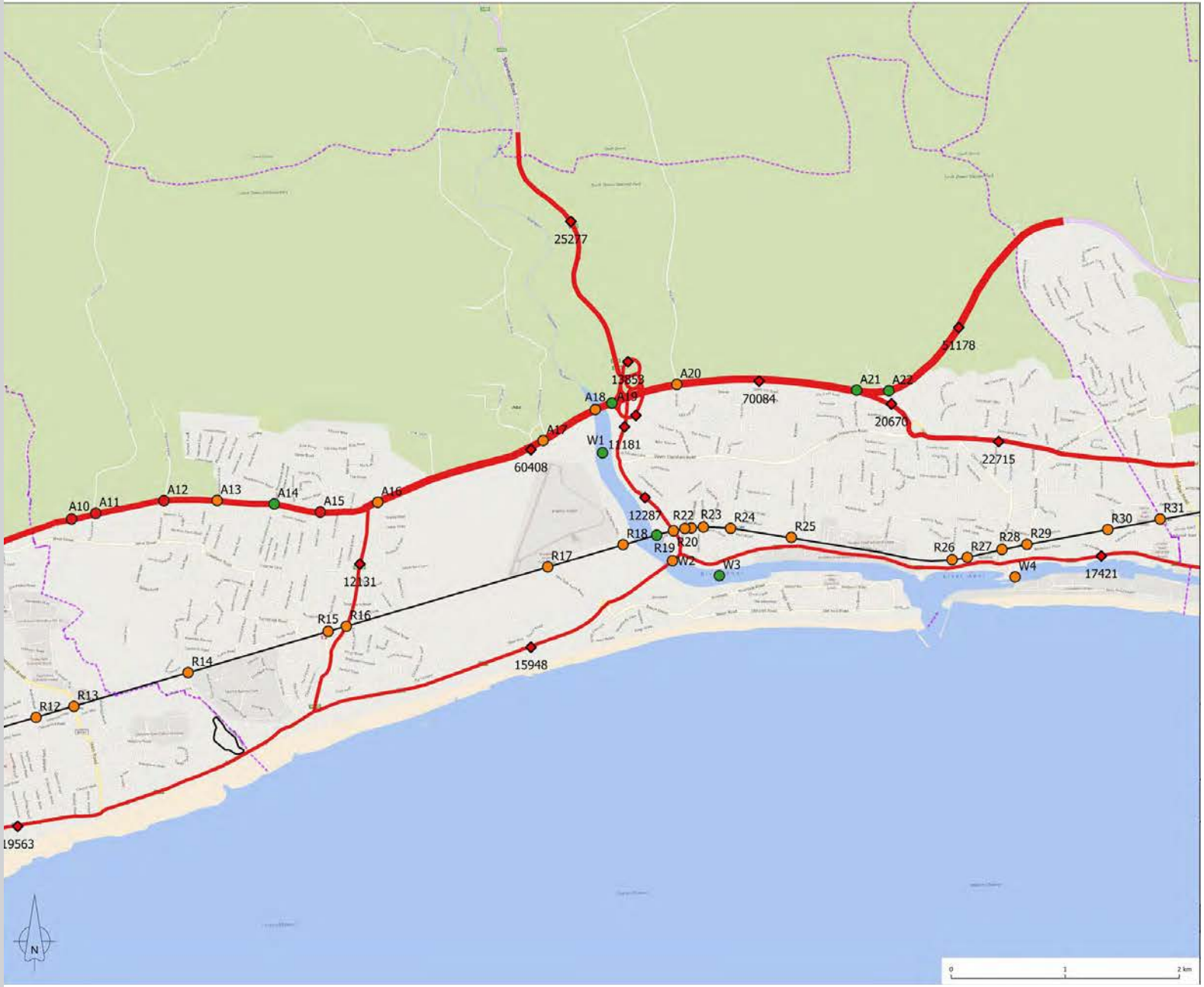

Adur trip generators and local attractors

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Retail

- Shopping Areas

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Schools

- Primary School
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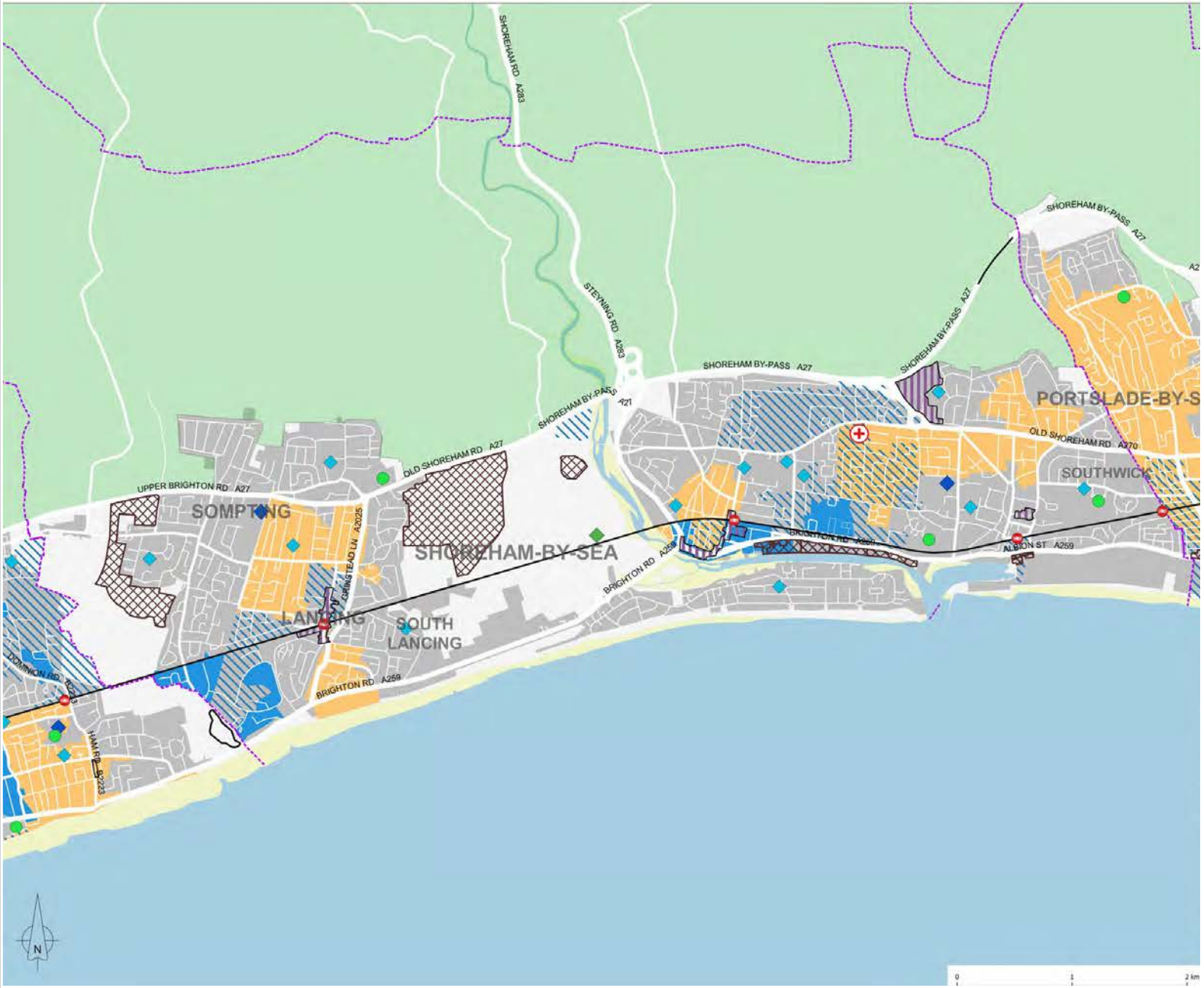


Shoreham Harbour

Adur District Council is working with its partners (Brighton & Hove City Council; West Sussex County Council; Shoreham Port Authority) on a joint project to regenerate Shoreham Harbour and surrounding areas. The Joint Area Action Plan (JAAP) was adopted in 2019. Objective 5 of the JAAP states:

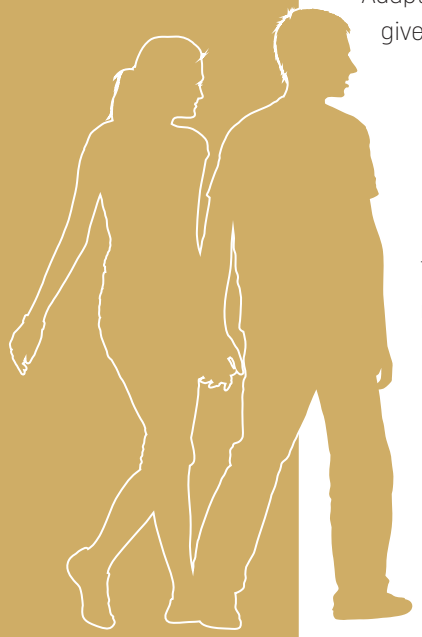
"To improve connections and promote sustainable transport choices through ensuring new developments are well served by high quality, integrated and interconnected networks, improved pedestrian, cycling and public transport routes and reducing demand for travel by private car in innovative ways."

Sustainable transport is supported in a range of policies in the JAAP which itself is also supported by the Shoreham Harbour Transport Strategy (2016).

85%
of all local people asked would walk more if routes were improved

Case Studies

In addition to the Government's Cycling and Walking Investment Strategy, a number of local authorities and devolved administrations have published their own strategies for increasing levels of walking and cycling and some of these are summarised opposite, together with a few practical examples.



London Cycling Design Standards

The Mayor of London has set out his vision for cycling and his aim to make London a 'cyclised' city. Building high quality infrastructure to transform the experience of cycling in our city and to get more people cycling is one of several components in making this happen. This means delivering to consistently higher standards across London, learning from the design of successful, well used cycling infrastructure and improving substantially on what has been done before. It means planning for growth in cycling and making better, safer streets and places for all.

The six core design outcomes, which together describe what good design for cycling should achieve, are: **Safety, Directness, Comfort, Coherence, Attractiveness and Adaptability.**

Adaptability is a measure in the Cycling Level of Service assessment matrix, with scores given against the following factors:

- Public Transport Integration
- Flexibility
- Growth enabled

The key point here is that provision must not only match existing demand, but must also allow for large increases in cycling.

Greater Manchester: Made to Move

The goal in Manchester is to double and then double again cycling in Greater Manchester and make walking the natural choice for as many short trips as possible. The intention is to do this by putting people first, creating world class streets for walking, building one of the world's best cycle networks, and creating a genuine culture of cycling and walking. According to the 2011 Census, the proportion of commuters who cycled to work in Greater Manchester was 2.2%.

To make the vision a reality, the aim is to create dedicated networks for walking and cycling. This means building segregated cycling routes on main roads and through junctions supported by traffic- calmed cycling routes. It also means improving the quality of the public realm and better wayfinding to make walking short journeys much easier.

If Greater Manchester residents were as likely to cycle to work as the Dutch, commuter cycling rates would increase tenfold.

Old Shoreham Road, Hove, Sussex

Closer to Adur & Worthing, Brighton & Hove City Council reallocated road space on Old Shoreham Road in 2012 and introduced "hybrid" cycle lanes, with low- level kerbs separating bicycles from motor vehicles and from the footway. The improvements also included:

- Full segregation for cyclists from motor vehicles, achieved by providing a low kerb edge
- Improvements to side road junctions to make crossing the road easier for pedestrians and people with mobility problems.
- Shared areas for cyclists and pedestrians at bus stops.
- A new zebra crossing across Old Shoreham Road at Chanctonbury Road.

The key actions being undertaken are:

- Publish a detailed, Greater Manchester- wide walking and cycling infrastructure plan in collaboration with districts.
- Establish a ring-fenced, 10 year, £1.5 billion infrastructure fund, starting with a short term Active Streets Fund to kick-start delivery for walking and cycling. With over 700 miles of main corridors connecting across Greater Manchester, this is the scale of network being aimed for.
- Develop a new, total highway design guide and sign up to the Global Street Design Guide.
- Deliver temporary street improvements to trial new schemes for local communities.
- Ensure all upcoming public realm and infrastructure investments, alongside all related policy programmes, have walking and cycling integrated at the development stage.
- Develop a mechanism to capture and share the value of future health benefits derived from changing how we move.
- Work with industry to find alternatives to heavy freight and reduce excess lorry and van travel in urban areas.

Liveable Cities and Towns

Dedicated high quality walking and cycling routes are only part of the overall picture and it is important to regard all public highways as public space and not solely movement corridors for motor vehicles. With this in mind, the following general principles apply when designing liveable cities and towns.

1. Ensure that every child who can has the opportunity and confidence to walk and cycle safely to school using high quality walking and cycling routes.

2. Support schools, workplaces and local communities to make walking and cycling the easiest and most attractive option for everybody who can to get around.

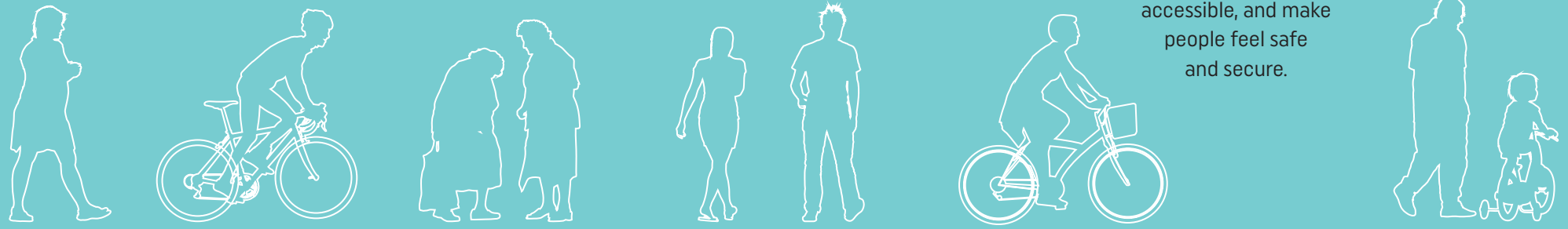
3. Create '20 minute neighbourhoods' – places where people can meet most of their everyday needs within a 20-minute walk of their home.

4. Radically reduce the volume and speed of vehicles on main roads, across city and town centres and local high streets – creating places where motorised transport is guest.

5. Remove the through-traffic from our residential areas – creating social streets where walking has priority.

6. Ensure every town and city is served by a dense network of protected cycle routes across urban areas, complemented by off- road routes and routes on quiet streets, as well as walkable routes to and within urban areas. Routes should be attractive, fully accessible, and make people feel safe and secure.

7. Support work to ensure that appealing, comprehensive, affordable and innovative public transport options are available for all, and integrated with walking and cycling.



8

Green our urban areas and ensure everyone can easily access high quality green spaces and green corridors that are good for and connect us to nature.

9

Embrace the potential of cargo bikes to replace vans and cars in the transportation of goods, services and people, whilst removing the negative impacts of freight in the urban environment.

10

Give everyone the opportunity to take up cycling by providing cycles, including electric and adapted, improving cycle parking, and expanding public cycle scheme provision, inclusiveness and integration.

11

Use evidence, insight and stories to make a compelling case for change and win hearts and minds.

12

Encourage a new public debate on motorised transport use – a citizens' assembly which considers the radical and immediate intervention needed to reduce unnecessary journeys by motor vehicles, fairly.

13

Ensure the real cost of motorised transport and its impact on current inequality and future generations is recognised in cross-departmental government decision making, and investment in sustainable and active travel is prioritised.

14

Support diversity in transport and planning, so that decision makers are better representative of the communities that they serve. This is key to making walking and cycling attractive and inclusive activities.

Low Traffic Neighbourhood

Low Traffic Neighbourhood (LTN) is the term used to describe an area-based approach to traffic management to support walking and cycling. A LTN works best when it covers an entire urban area or traffic cell (the area between mains roads and natural boundaries). This is because traffic is best managed across an area and doing something on a road by road basis will often just move the problem.

In a Low Traffic Neighbourhood a range of measures are introduced to make it more difficult for motor traffic to travel through an area. Features include one-way streets, banned turns and features called modal filters where roads are closed to motor traffic (at one end or in the middle) removing the ability of non-local traffic to drive along a street.

Access to all addresses by motor vehicle is still possible and deliveries and servicing can still take place. Only the ability for motor traffic to travel through residential area is removed. This removes popular short cuts for car drivers sometimes known as rat-runs. The removal of non-local traffic allows streets to be redesigned and spaces to be repurposed to people and greening. People can enjoy the streets in which they live, socialise, plant new spaces and children can play out.

The removal of through motor traffic reduces local speeds and volumes which in turn improves safety, enabling more active and sustainable travel, and increase the sense of place and community. This benefits local air quality, public health, social inclusion and mobility, and a wide range of other social, environmental and economic factors.

Whilst there are lots of streets in the UK that have been closed to through traffic the introduction of area-wide low traffic neighbourhoods in the UK is rare.

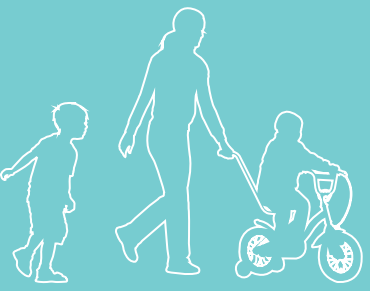
In Europe, the introduction of low traffic neighbourhood type measures is commonplace even in smaller towns and villages.

Once bypassed towns are filtered to prevent through traffic traveling through meaning local journeys are normally walked or cycled.

The most well-known low traffic neighbourhood project in the UK is the Mini-Holland programme in Waltham Forest. The award-winning programme includes 6 low traffic neighbourhoods introduced across Leyton, Leytonstone and Walthamstow, as part of a £27 million programme to make the borough a great place to walk and cycle.

In the region of 8 square kms of the borough has been included in the programme to date, with streets turned from busy through routes into quiet places to live, spend time and play. Over 50 streets have been closed to through traffic including local high streets that have been repurposed as part pedestrianised places for people.

Large parts of the adjoining towns are now quiet residential areas free of through traffic. Areas of planting, street trees and places for people have been added to local streets.



Streets around schools are closed to traffic meaning school children walk, cycle or scoot to school and issues associated with the school run being driven are mitigated.

Concerns were raised that putting through traffic back onto main roads would cause congestion. As with other places that have introduced similar schemes this did not materialise.

In Walthamstow Village overall motor traffic levels fall by over 50% inside the low traffic neighbourhood area and by 16% including the main roads. Motor traffic levels have subsequently reduced on other main roads as other area schemes have been completed.

Concerns around businesses losing trade have not been realised either with businesses located in the calmed areas thriving.

However, the aims associated with mode shift and increases in walking and cycling have been realised.

A study by the University of Westminster found that people living in the Walthamstow Village area walked and cycled more than those who didn't live in the area by a significant 42 minutes a week (32 mins walking and 9 mins cycling) on average.

A study by the Kings College Air Quality Research Group found that 50,000 less homes were exposed to NO levels that exceeded EU levels and 5 year old children were likely to live on average 9 weeks longer due to increased levels of activity and improved air quality.

Many London boroughs are now working on implementing similar projects as part of the Liveable Neighbourhood programme. Further north proposals have been developed for 27 modal filters for Levenshulme in Greater Manchester, part of Chris Boardman's Bee Network. More recently the government has specifically mentioned Low Traffic Neighbourhoods as a mechanism to support the aspired increase in walking and cycling as part of the countries recovery from the impact of Covid-19.

In Lambeth, the Council is already accelerating its programme of low traffic neighbourhoods in response to the need for more space for people to walk and cycle safely. Transport for London have also included low traffic neighbourhoods as one of the options London boroughs can consider, to provide more space for walking and cycling trips as part of their Streetspace for London response to the global pandemic.

Low traffic neighbourhoods are best developed and delivered in partnership with the local community. This means expert local knowledge is used to form proposals that provide the right conditions for active travel and the local ownership of streets and spaces. Popular approaches include using on-line engagement platforms and co-design sessions with the community to take ideas and issues and turn them into robust proposals that are welcomed additions to the local streetscene.

This local ownership of proposals translates into community involvement in maintaining greenspaces, new community links and importantly increased levels of walking and cycling and reduced local car use.

Worthing Walking & Cycling Network

Primary cycle routes

200 Ferring-Worthing-Fishersgate

210 Goring-Lancing-Portslade

310 Worthing-Findon valley

Secondary Cycle Routes

201 Ferring-East Worthing

202 Goring-Lancing

203 West Durrington-Broadwater

211 West Durrington-Sompting

212 A27-Salvington

300 West Durrington (west)-seafront

301 West Durrington (east)-seafront

302 Findon-seafront

303 Salvington-seafront

304 Grove Lodge-seafront

311 Lyons Farm-Worthing

312 Sompting-seafront

313 Sompting-Brooklands Park

Proposed Walking and Cycling Network

Primary Cycle Route

Secondary Cycle Route

Primary Walking Zone

Secondary Walking Zone

2km Walking Zone

WSCC STP Routes

Trip Generators

Employment

2011 Census Workzones - Density of Employment

50 + Jobs Per Hectare

Retail

Shopping Areas

Education

Secondary School

Further Education

Services & Amenities

Leisure

Hospital

Other

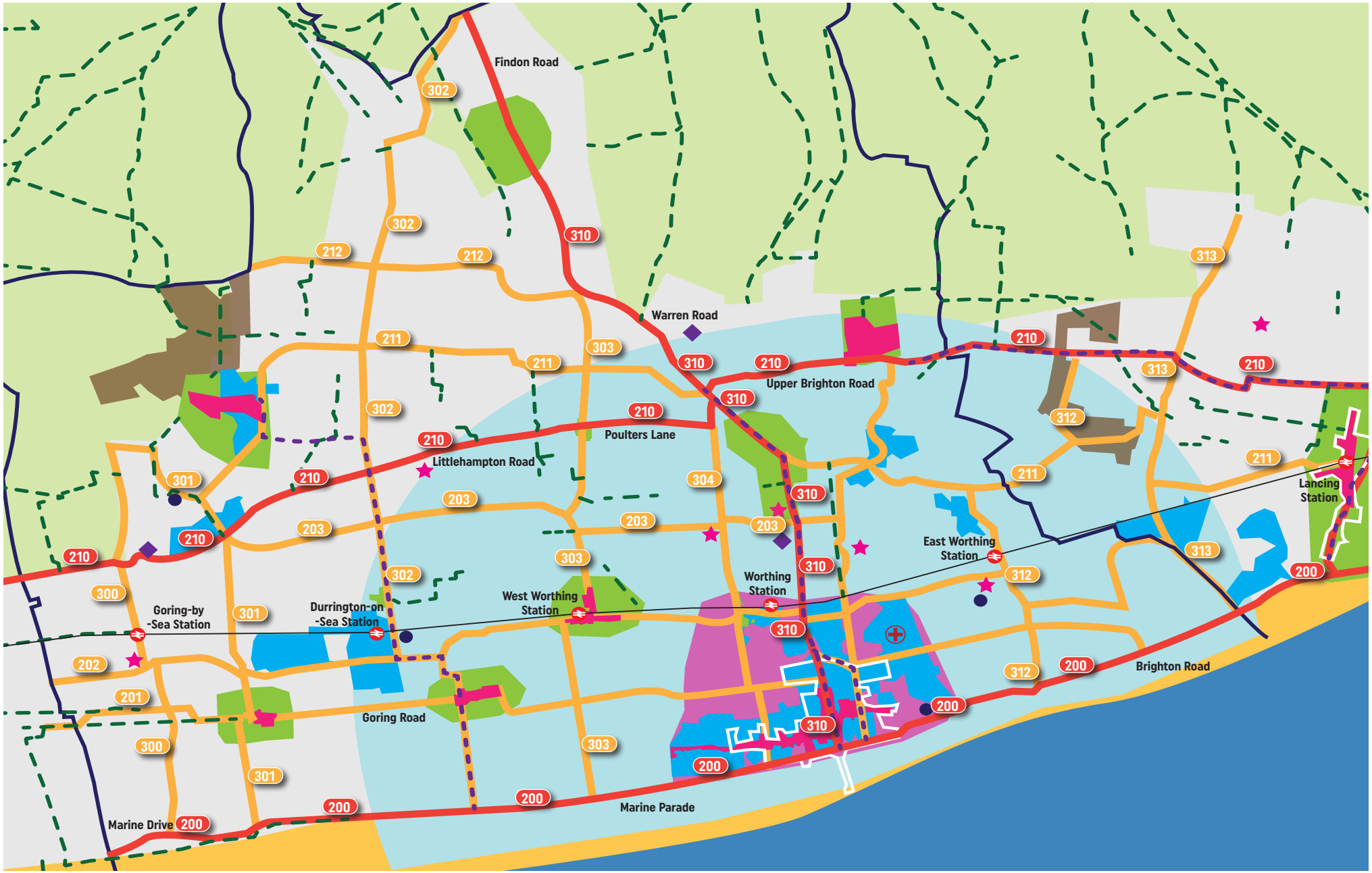
Town Centre Boundaries

Public Rights of Way

Railway Station

Development Sites

Administrative Boundary


Findon Road
Warren Road
Upper Brighton Road
Poulters Lane
Littlehampton Road
Goring-by
-Sea Station
Durrington-on
-Sea Station
West Worthing
Station
Worthing
Station
East Worthing
Station
Lancing
Station
Goring Road
Marine Drive
Marine Parade
Brighton Road
302
212
310
313
211
303
210
312
304
301
203
300
202
201
200

Adur Walking & Cycling Network

Primary cycle routes

- 200 Ferring-Worthing-Fishersgate
- 210 Goring-Lancing-Southwick
- 320 Monks Farm-Lancing
- 330 Downs Link (Steyning-Shoreham)

Secondary cycle routes

- 202 Goring-Lancing
- 204 Shoreham-Southwick-Hove
- 211 West Durrington-Sompting
- 312 Sompting-seafront
- 313 Sompting-Brooklands Park
- 321 Steyning-Widewater
- 331 Buckingham Road (Shoreham-by-Sea)
- 332 Hammy Lane (Shoreham-by-Sea)
- 333 Kingston Lane (Shoreham-by-Sea)
- 334 Southwick-Portslade
- 335 Shoreham-Mill Hill

Proposed Walking and Cycling Network

- Primary Cycle Route
- Secondary Cycle Route
- Primary Walking Zone
- Secondary Walking Zone
- 2km Walking Zone
- WSCC STP Routes

Trip Generators

Employment

2011 Census Workzones - Density of Employment

- 50 + Jobs Per Hectare

Retail

- Shopping Areas

Education

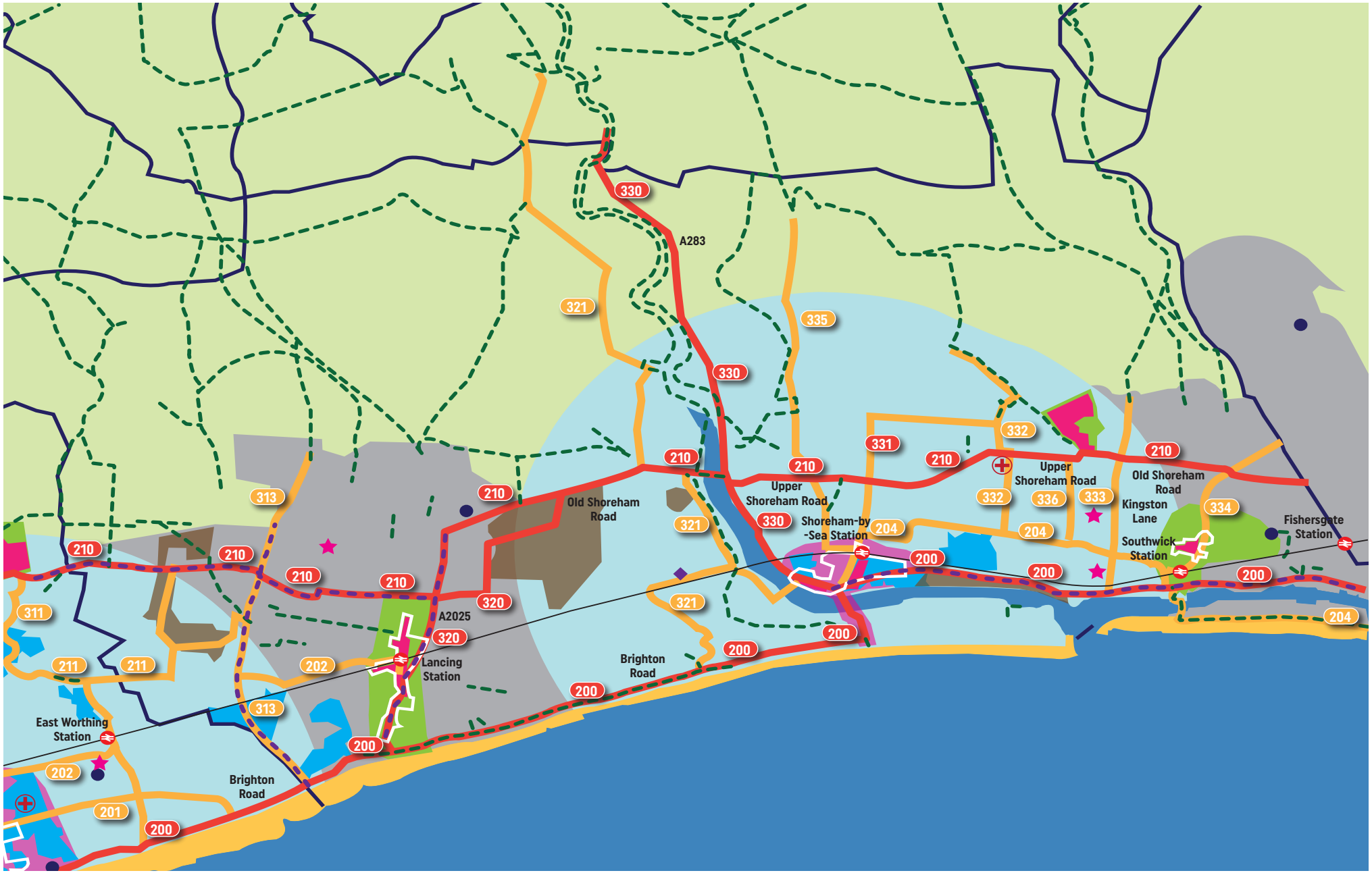
- Secondary School
- Further Education

Services & Amenities

- Leisure
- Hospital

Other

- Town Centre Boundaries
- Public Rights of Way
- Railway Station
- Development Sites
- Administrative Boundary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Upper
Shoreham Road
Upper
Shoreham Road
Old Shoreham
Road
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210
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210
210
Old Shoreham
Road
330
Shoreham-by
-Sea Station
321
204
332
336
333
Kingston
Lane
334
Fishersgate
Station
204
Southwick
Station
200
200
200
311
320
A2025
320
321
200
204
211
211
202
Lancing
Station
Brighton
Road
200
313
East Worthing
Station
200
202
Brighton
Road
201
200

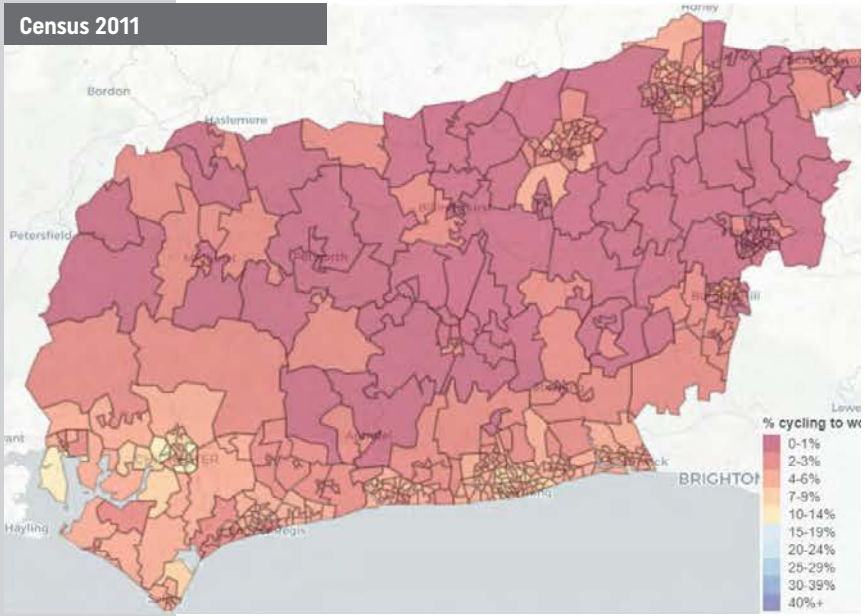
Proposed cycle routes with destinations and issues

Route number	Status	Length (km)	Route name	Key destinations	Important issues to address
200	Primary	16.9	Coastal route (NCN 2 west)	Seafront, Worthing town centre, Splash Point, Shoreham town centre, Southwick local centre, development sites	Goring Greensward (Village Green), width of seafront path especially at Widewater, A259 Brighton Rd highway width
201	Secondary	7.7	Ferring – East Worthing	Goring local centre, Goring Rd shops, Our Lady of Sion School, Worthing town centre, Worthing Hospital, East Worthing local centre, Brooklands PaRK	A259 Richmond Rd & Lyndhurst Rd highway width
202	Secondary	9.2	Goring – Lancing	St Oscar Romero High School, Durrington employment zone, West Worthing local centre, Worthing town centre, Worthing & other stations between Goring & Lancing, Worthing Hospital, Davison High School, Lancing local centre	A2031 Tarring Rd/Teville Rd highway width, on-street parking & trees in footway, Western Rd railway bridge, Dale Rd industrial estate
203	Secondary	4	West Durrington – Sompting	West Durrington employment zone, Worthing High School, Bohunt School, St Andrew's High School, Sompting Estate	Residential roads highway widths & on-street parking, crossing of A24
204	Secondary	5	Shoreham – Hove (NCN 2 east)	Shoreham town centre, Shoreham station, Buckingham Park School, St. Peter's School, Shoreham Academy, Shoreham College, Southwick local centre, Shoreham Port, Hove Lagoon	Private land at Shoreham Airport, A259 Norfolk Bridge highway width, Middle Rd highway width
210	Primary	16.6	Ferring – Portslade	Northbrook College, West Durrington employment zone, Durrington High School, Worthing College, Lyons Farm retail & business park, Sompting local centre, Robert Woodard Academy, New Monks Farm development, Lancing College, Southlands Hospital, Holmbush retail park, Shoreham Academy	Capacity at key junctions, A2032 Poulter's Lane highway width, Broadwater Village Green, A27 Upper Brighton Rd highway width, Holmbush roundabout, Old Shoreham Rd speeds
211	Secondary	6.9	West Durrington - Sompting	West Durrington retail & business parks, Worthing College, Broadwater local centre, Broadwater business park	Residential roads highway widths, trees in verge
212	Secondary	2.2	A27 Salvington	Worthing College	A27 Arundel Rd highway width
300	Secondary	2.9	Seafront – West Durrington (west)	West Durrington development, Northbrook College, St Oscar Romero High School	A2032 Goring Crossways crossing, highway widths
301	Secondary	3.3	Seafront – West Durrington (east)	West Durrington development, West Durrington employment zone, Goring local centre, Goring station, seafront	Railway subway
302	Secondary	6.3	Seafront – Findon	Durrington employment zone, Goring Rd shops, Worthing Leisure Centre, development sites, Durrington station, seafront	Residential roads highway widths
303	Secondary	3.6	Seafront – Salvington	West Worthing local centre, West Worthing station, seafront	Highway widths, capacity at Thomas A Beckett junction
304	Secondary	2.5	Seafront – Grove Lodge	Worthing High School, Our Lady of Sion School, Worthing town centre, Worthing station, seafront	Highway widths, Broadwater Village Green, West Buildings one-way street
310	Primary	6	A24 (seafront- Findon)	Seafront, Teville Gate development, Worthing Town Centre, Worthing station, Worthing High School, Greater Brighton Metropolitan College, Broadwater local centre, Worthing College, Findon local centre	A24 Warren Rd highway width, A24 Broadwater shops highway width & parking, capacity at key junctions, A27 Grove Lodge roundabout

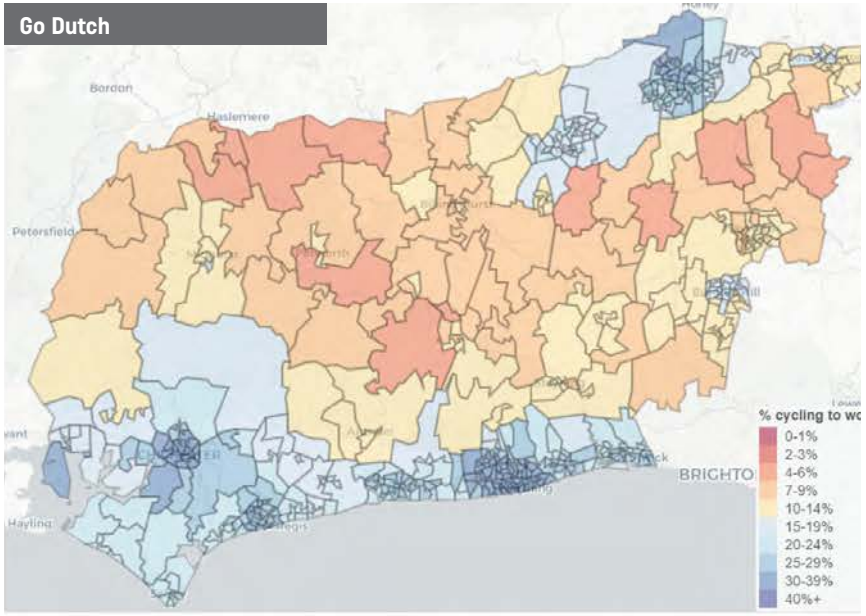
Route number	Status	Length (km)	Route name	Key destinations	Important issues to address
311	Secondary	3.1	Seafront – Lyons Farm	Lyons Farm retail & business park, Broadwater business park, St Andrew's High School, Worthing Hospital, Worthing town centre, seafront	B2223 Dominion Rd crossing, narrow railway subway, A259 High St highway width
312	Secondary	2.9	Seafront – Broadwater/ Sompting	Sompting Estate, Broadwater business park, Davison High School, East Worthing local centre, East Worthing station, seafront	Private farm land & West Sompting development, B2223 Ham Rd highway width
313	Secondary	3.1	Seafront – Sompting	Sompting local centre, Lancing business park, Brooklands Park, seafront	Western Rd highway width, A259 Brighton Rd crossing
320	Primary	4.3	Seafront – New Monks Farm	Lancing College, Shoreham Airport, New Monks Farm development, Lancing local centre, Lancing station, seafront	A2025 South St highway width
321	Secondary	7.2	Seafront – Steyning	Seafront, Shoreham Airport, Ricardos, Lancing College, South Downs, Steyning	A27 Coombes crossing, private land at Shoreham Airport, A259 Norfolk Bridge, A259 Brighton Rd crossing
330	Primary	5.2	Downs Link (Shoreham – Steyning)	Shoreham town centre, Ropetackle, Downs Link, Ricardos, South Downs, Bramber	A259 High St highway width, crossing of A283 at Ropetackle
331	Secondary	2.5	Buckingham Rd north	Shoreham town centre, Shoreham station, Buckingham Park	Highway widths
332	Secondary	1.9	Hammy Lane	Southlands Hospital, Middle Rd recreation ground	Highway widths
333	Secondary	1.7	Kingston Lane	Shoreham Academy, Glebe Primary School	A270 Old Shoreham Rd crossing, highway widths
334	Secondary	1.7	Southwick – Portslade	Southwick local centre, Southwick station, Portslade village	B2167 Watling Rd highway width
335	Secondary	3.3	Shoreham – South Downs Way	Shoreham town centre, South Downs	Crossing of Upper Shoreham Rd, residential road highway widths
336	Secondary	0.7	Stoney Lane	Shoreham Academy, Holmbush retail park	Residential road highway widths, Holmbush roundabout

PCT Commute Data

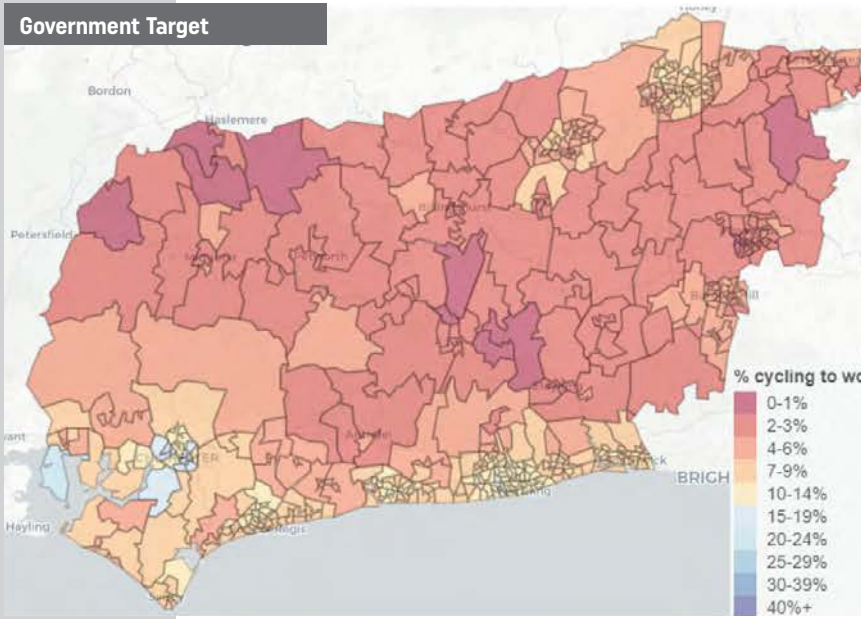
Census 2011



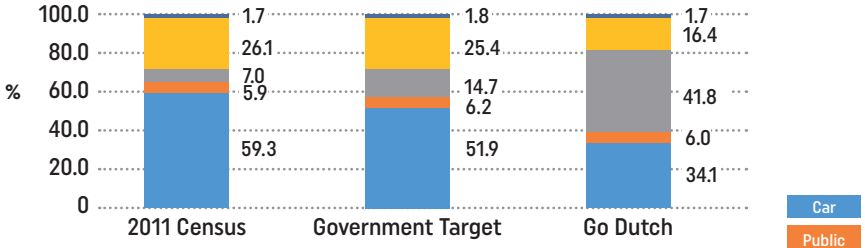
Go Dutch



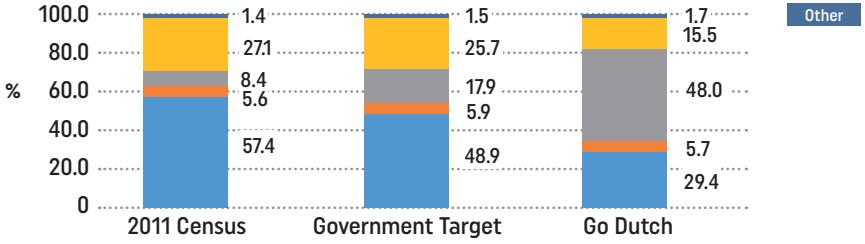
Government Target



Modal Split Commute Trips Within Adur Borough

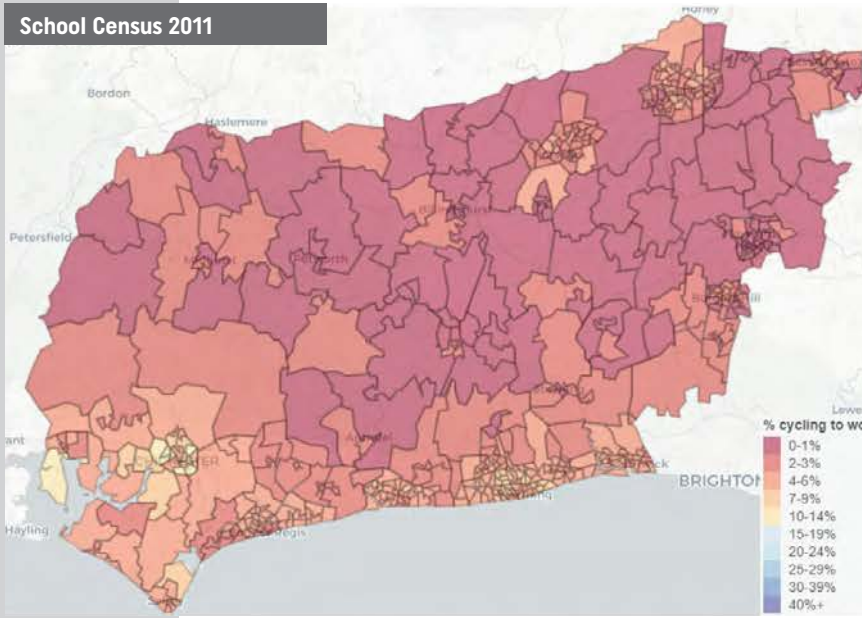


Modal Split Commute Trips Within Worthing Borough



PCT School Data

School Census 2011



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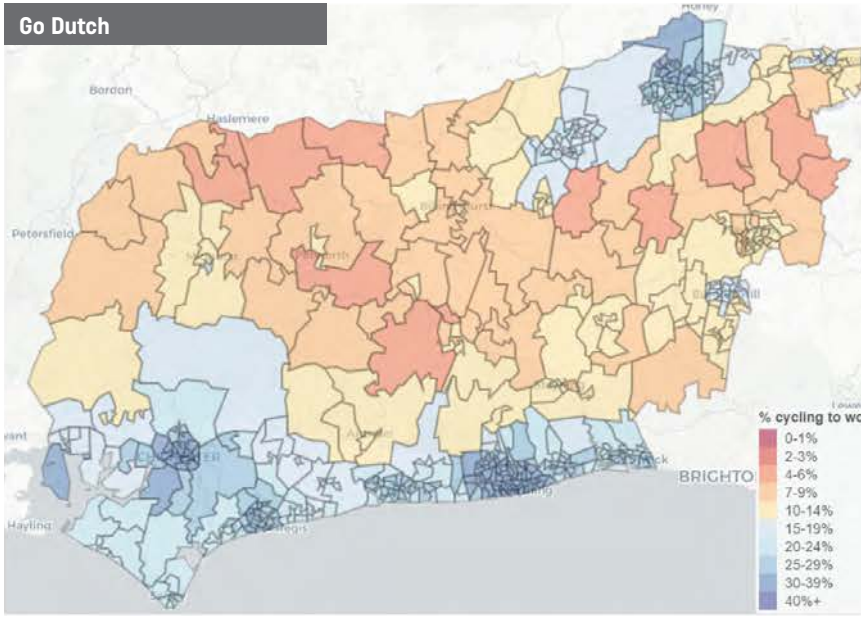
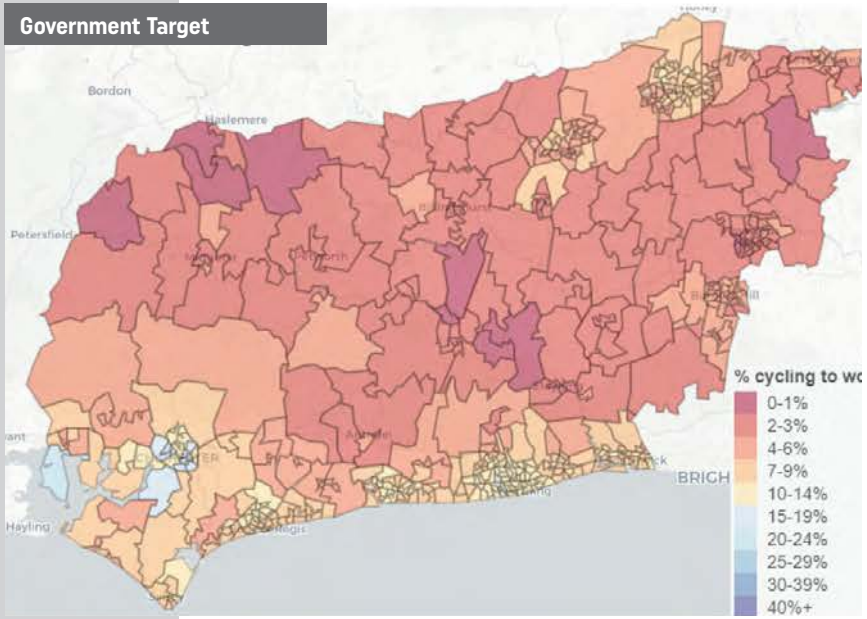
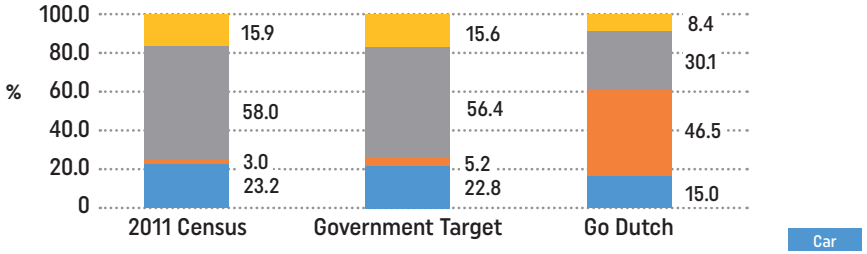


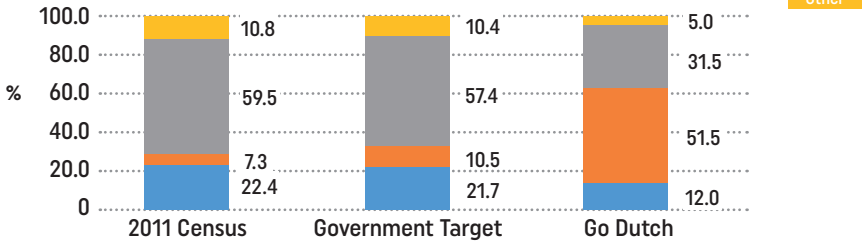
Government Target



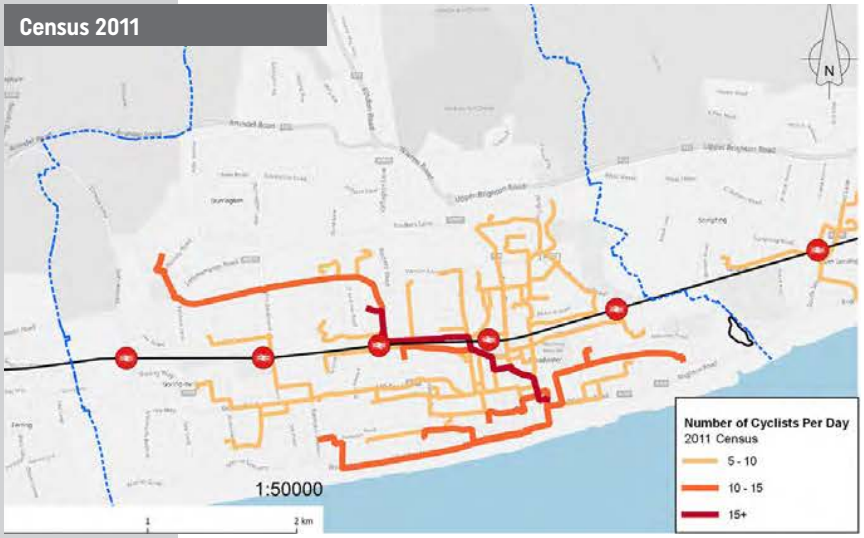
Adur Borough School Trips

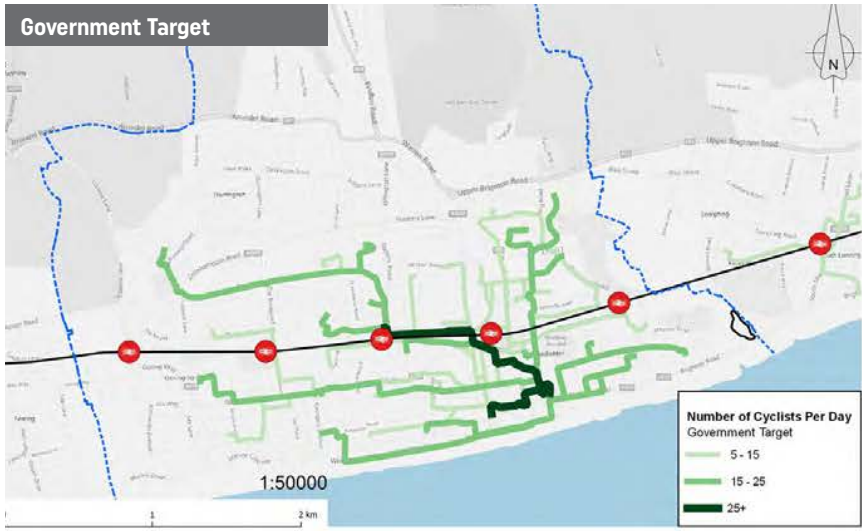


Worthing Borough School Trips



Worthing PCT Commute Data

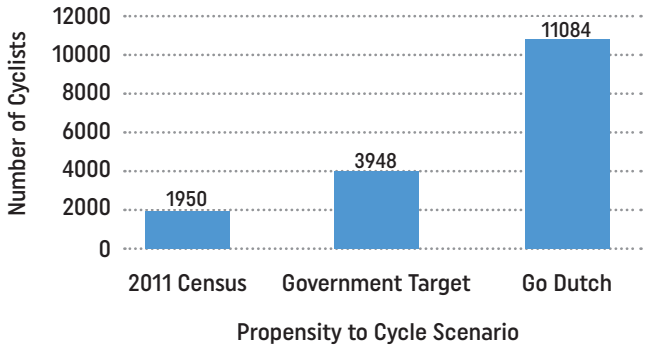


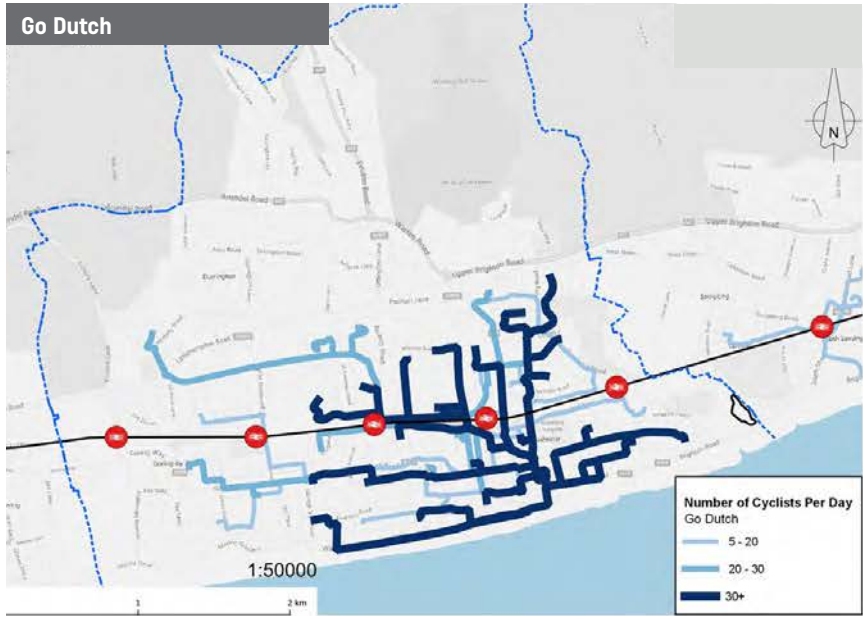


These maps of cycling routes to work are derived from Census 2011 data, so do not reflect any recent changes in employment sites. If the local priority is enabling more people to cycle to work, then these travel patterns are a useful guide to routes where investment is needed. However, it must be remembered that commuting is only 14% of all trips.

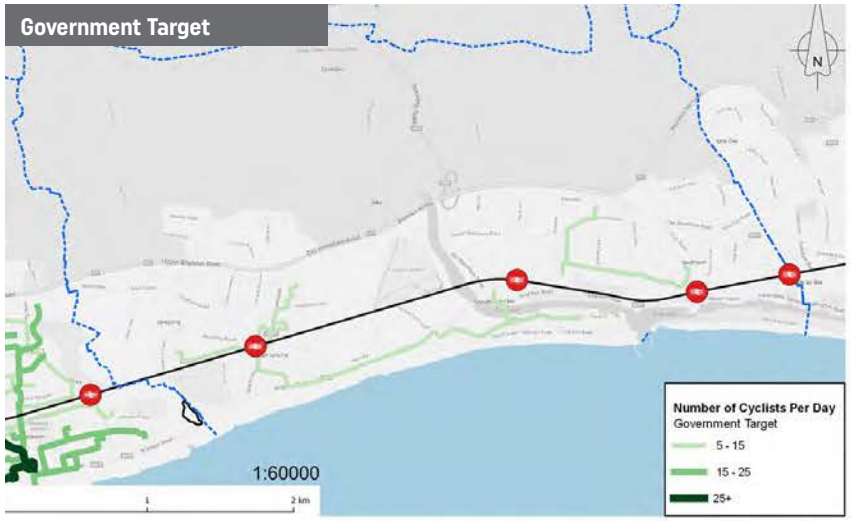
In Worthing, there is clearly huge potential for increasing cycle trips to work. The Government target would see a doubling of trips, while the Go Dutch scenario suggests that cycling could increase more than five-fold.

Worthing: Total Cyclists Per Day





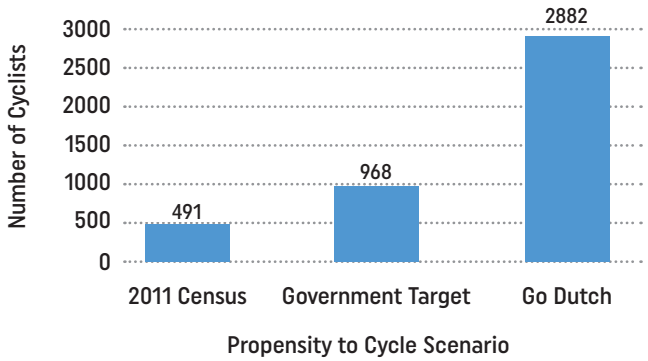
Adur PCT Commute Data

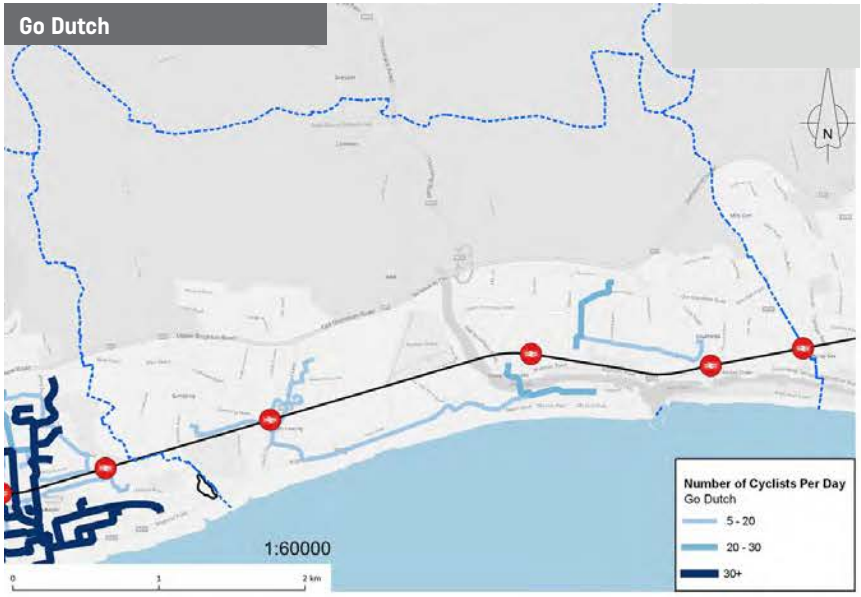


In Adur, there are fewer commuting trips overall, which reflects the smaller population and longer journey distances to work. The Government target would see a doubling of trips, while the Go Dutch scenario suggests that cycling could increase nearly six-fold.

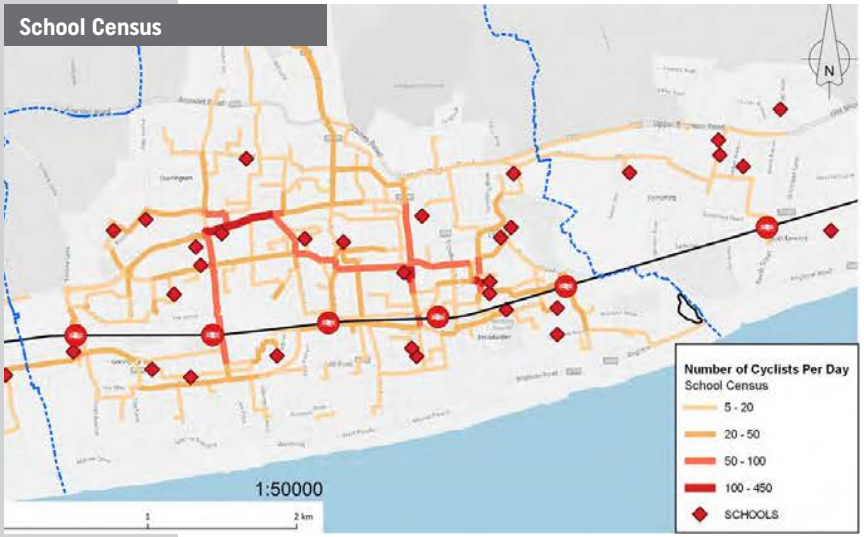
The NCN2 shared path at Brooklands Park is the busiest recorded stretch of cycle route in West Sussex. It is possible that the PCT tool is under-representing cycle flows in Adur, although most trips along the seafront may not be for commuting.

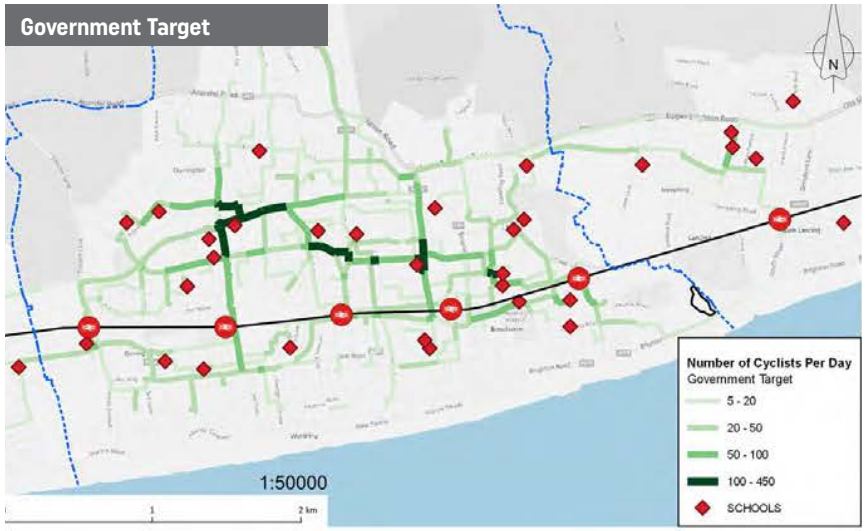
Adur: Total Cyclists Per Day





Worthing PCT School Data

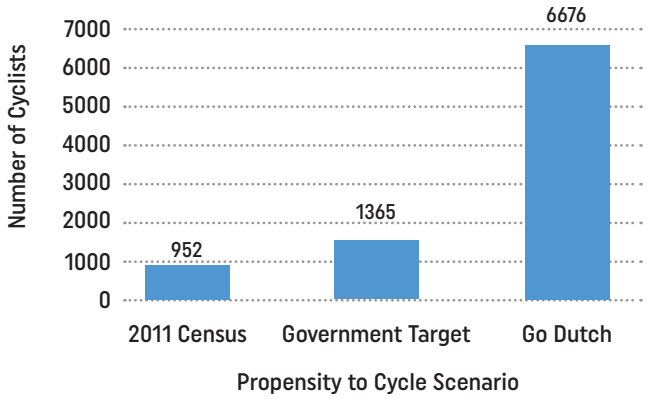


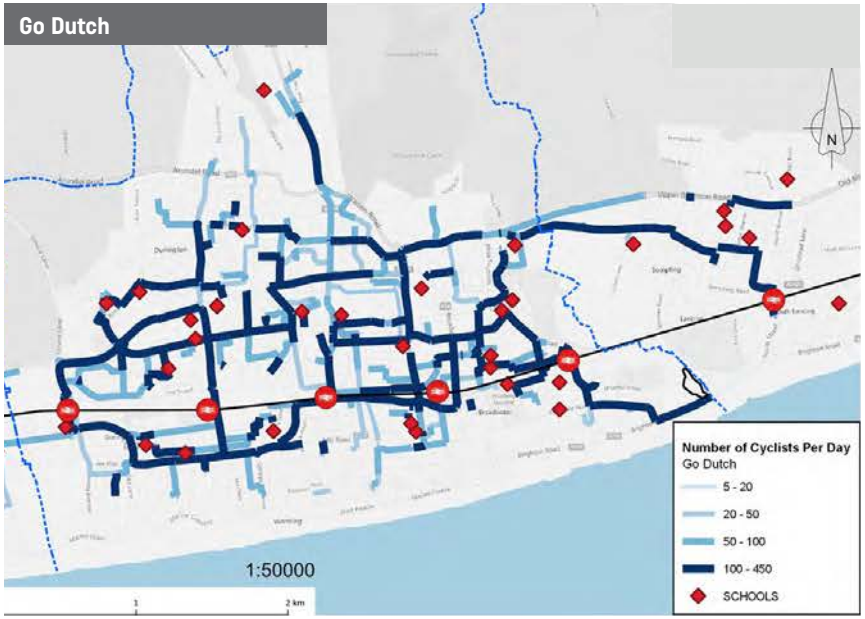


These maps of cycling routes to school are derived from School Census 2010/11 data, so do not reflect any recent changes in school sites or catchment areas. If the local priority is enabling more students to cycle to school, then these travel patterns are a useful guide to routes where investment is needed. However, it must be remembered that education and escort to education is only 13% of all trips.

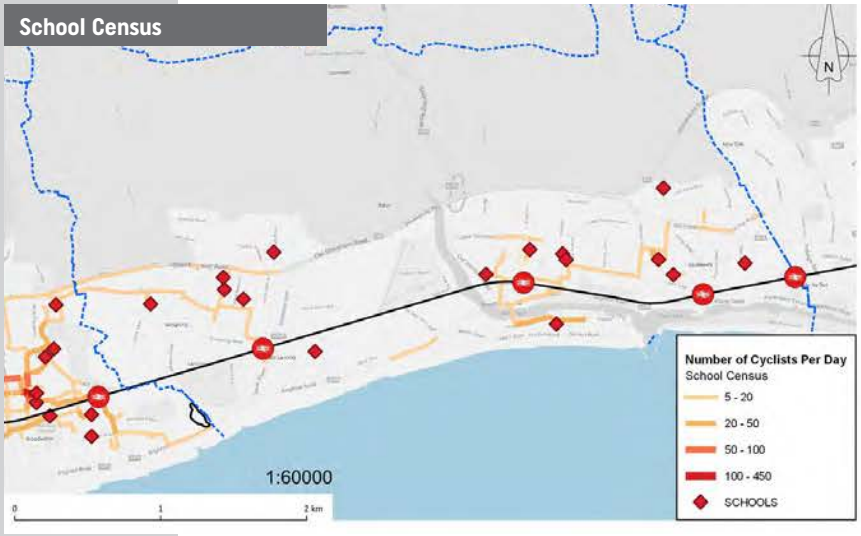
In Worthing, the Government target would see a modest increase of 43% in cycling to school, while the Go Dutch scenario suggests that cycling could increase to seven times 2010/11 levels.

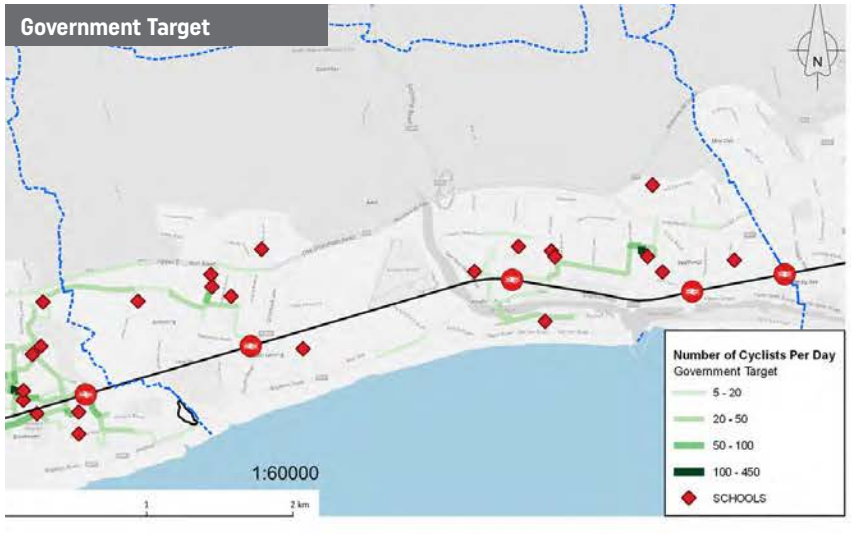
Worthing Schools: Total Cyclists Per Day





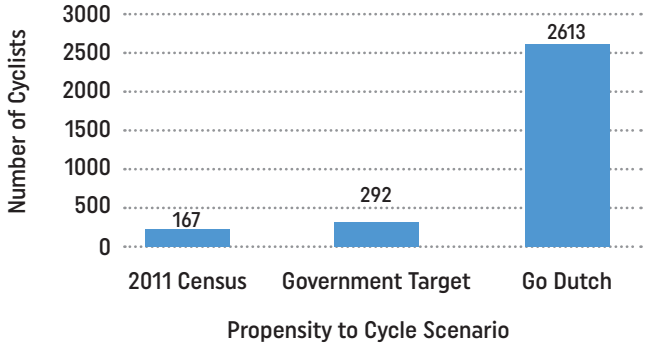
Adur PCT School Data

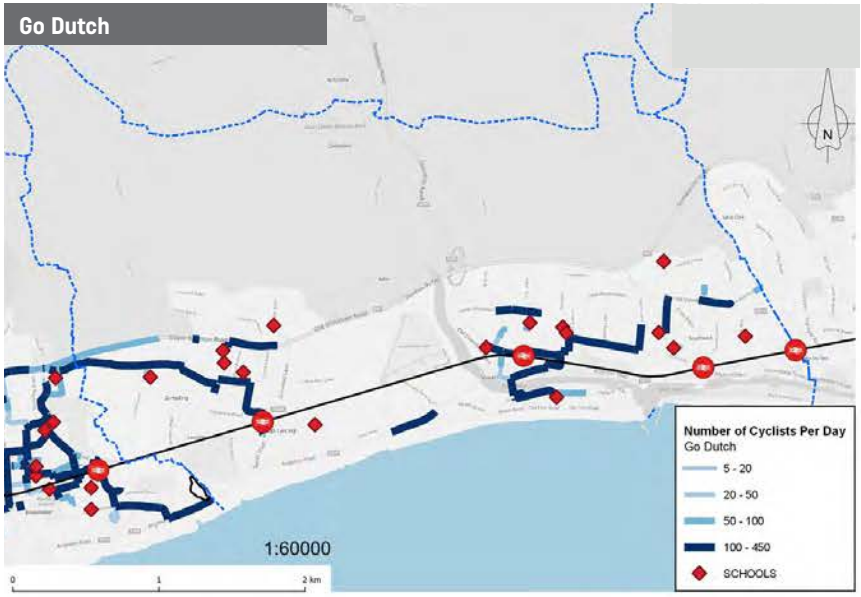




In Adur, the number of cycling trips to school in 2010/11 was much lower than in Worthing, even after allowing for the smaller population. The Government target would see a modest increase of 75% in cycling to school from low levels, while the Go Dutch scenario suggests that cycling could increase to over 11 times 2010/11 levels.

Adur Schools: Total Cyclists Per Day





Adur & Worthing 2011 Census Commuters by Car (Journeys Under 5km)

15-25

25-35

35 +

Employment

Density of Employment (Jobs per Hectare)

20-50

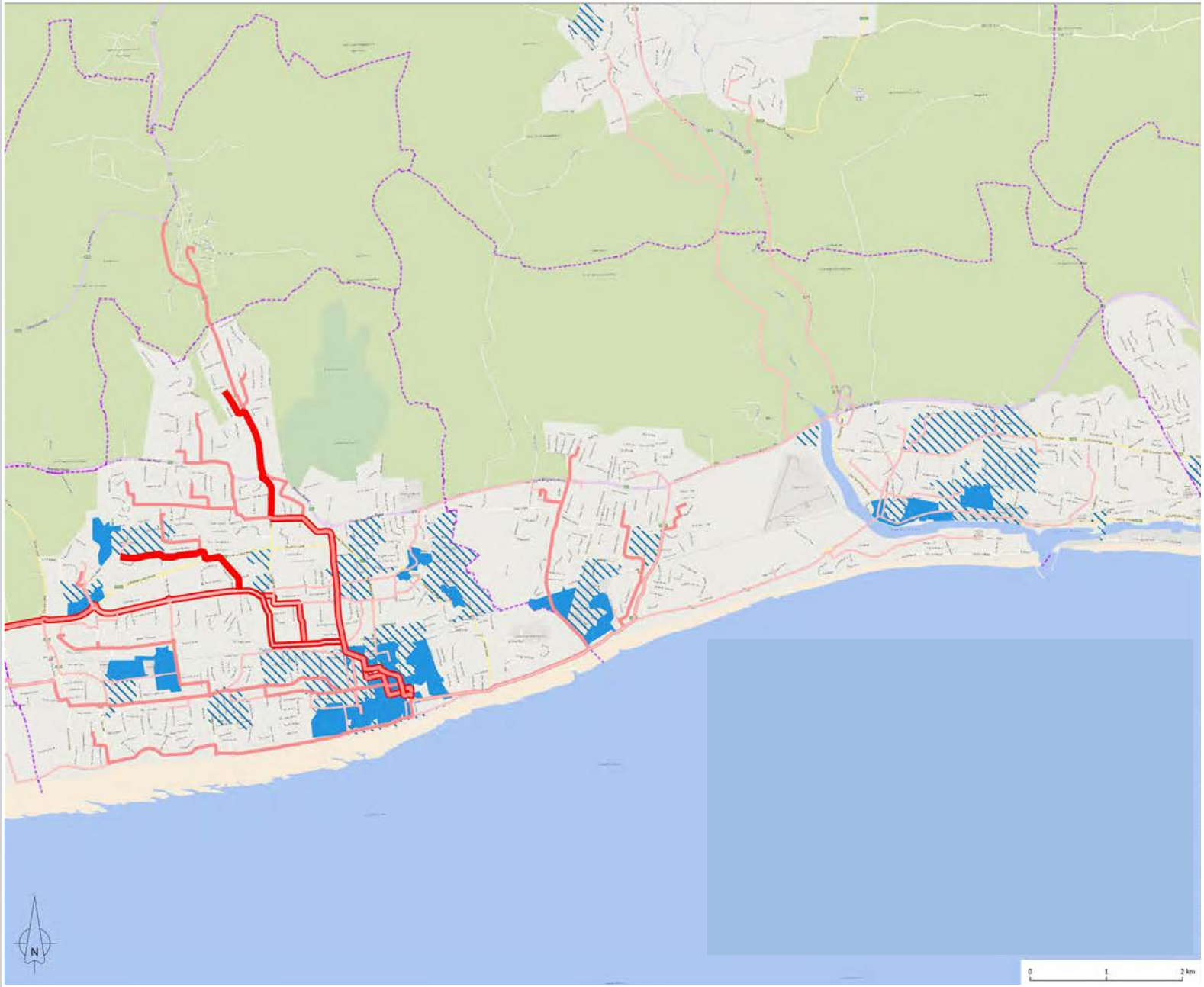
50 +

Other

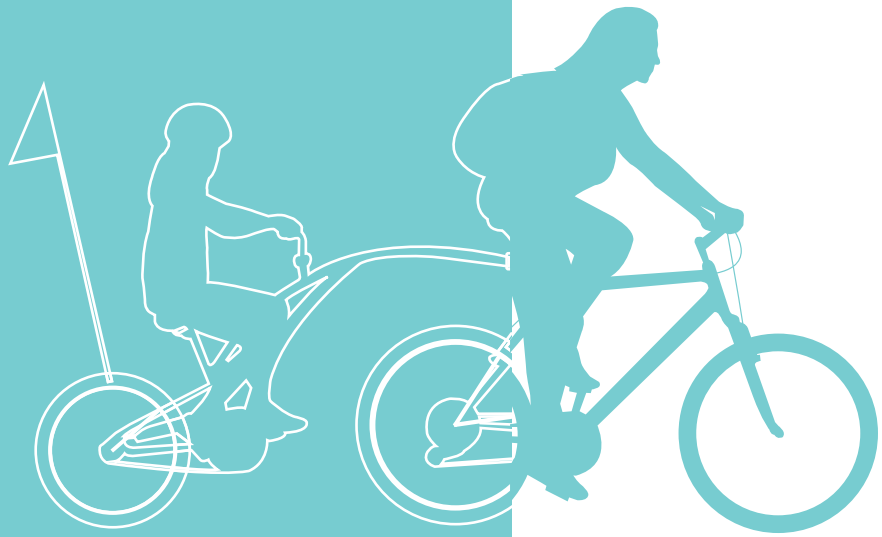
Administrative Boundary

One weakness of the PCT cycle commute model is that it is based on existing trips by bike and will tend to emphasis those routes that are already being used. The target market for new cycle trips is people currently driving short distances to work. This map shows the car trips under 5km from the Census 2011 travel to work data, mapped to the best available roads.

Unsurprisingly, many of the same corridors are indicated for car trips as they are for cycle trips, with some notable exceptions.



Glossary of terms



Advanced Stop Line (ASL)

A second stop line at traffic signals for cycles, ahead of the stop line for motor traffic, with a waiting area marked with a cycle symbol and extending across some or all of the traffic lanes. Some ASLs are accessed by a cycle lane.

Bus gate

An entry point across a road where only buses (and possibly cycles and/or taxis) are allowed through. It can be enforced by signs, lifting bollards and/or cameras.

Continuous footway

A way of providing priority for people walking over turning vehicles at side roads by continuing the footway surface across the junction, providing strong visual priority to pedestrians. A 'continuous cycleway' can be added in a similar way for a cycle lane or track.

Contraflow cycling

Where cycles are allowed to travel in both directions on streets that are one-way for motor traffic. It can be implemented using lane markings and signing (with or without some form of physical protection), or by using signing only at the entrance to the contraflow section.

Footway (pavement)

A part of the highway for sole use of people walking. Where a footway runs alongside a road, it is commonly referred to as a pavement (see 'Shared use').

Floating bus stop (bus stop bypass)

A way to continue a cycle lane or track behind a bus stop so that cycles do not have to interact with buses. May be at the same level as the footway, or kerbed, and some have zebra crossings for bus passengers to cross the cycle area.

Light segregation

The use of intermittently placed objects, such as bollards, posts or a low kerb, to separate and protect a cycle facility (usually a mandatory cycle lane) from motor traffic.

Cycle bypass

A form of physical separation for cycles enabling them to avoid a restriction for other road users such as traffic signals and chicanes.

Cycle lane - advisory

A dashed white line marking out a strip along the carriageway intended for cycles. Motor vehicles should not enter the lane unless it is unavoidable but are not legally prohibited from doing so.

Cycle lane - mandatory

A solid white line marking out a strip along the carriageway for the exclusive use of cycles (usually full time but may be limited hours only). Motor vehicles are legally prohibited from driving in the lane.

Cycle parking

Formal provision for locking cycles, ranging from hoops ('Sheffield stands') to lockers and compounds. Cycle parking should be fit-for-purpose, secure and well located, and allow all types of cycles to be parked.

Dropped kerb

A feature to allow people walking to avoid the need to step up or down, usually at formal crossings. Must be flush so that wheelchair and pushchair users have easy level access.

Foot/cycle bridge

A bridge crossing any road or other barrier for use by pedestrians, possibly shared with cycles. May be ramped and should not be stepped only to allow inclusive use.

Liveable neighbourhood

An area of streets (usually mostly residential) where through motor traffic is removed or reduced and calmed to provide a better, more liveable neighbourhood to support walking, cycling, play and community use.

Modal filter (road closure)

A permanent or part-time road closure for motor traffic with access for pedestrians and cycles. It may be enforced by physical measures or signs only (and in London only by cameras).

Narrowing

Physical narrowing of the carriageway on one or both sides to shorten pedestrian crossing distances, with dropped kerbs or flush raised table and tactile paving.

Parallel crossing

A crossing similar to a zebra crossing, which can be used by cycles as well as pedestrians. May be on a raised table.

Parklet

A small landscaped area with features such as planting, seating or other public realm features, usually located in place of a former car parking space .

Pedestrian/cycle refuge or island

A physical island in the carriageway to support pedestrian (and sometimes) cycle crossing movements, as well as cycle right turns. May be on a raised table. Should be wide enough to accommodate all users.

Glossary of terms continued

Pelican crossing

A signal controlled crossing for pedestrian use only. May be on a raised table.

Public realm improvements

Measures which improve the look and feel of an area, including improvements like tree planting, seating, art and other features to make public spaces more attractive.

Raised table

A raised section of the carriageway, used to slow traffic and make it easier for pedestrians to cross.

School Street

Section of street outside a school with restricted access during school pick-up and drop-off times, enforced by bollards, signs or (in London only) cameras.

Side road zebra markings

Zebra markings across the mouth of a side road junction without Belisha beacons. These are not yet legal – if approved they will formalise and strengthen pedestrian priority that already exists in Highway code rule 170.

Single stage crossing

A crossing point where pedestrians and/or cycles are able to cross a road or junction in one movement without having to wait on a refuge island.

Tactile paving

Paving that helps people with visual impairments to understand the street environment by using changes in texture or colour.

Toucan crossing

A signal controlled crossing that can be used by both pedestrians and cycles. May be on a raised table.

Segregated cycle track

A cycle facility, physically separated from areas used by motor vehicles and pedestrians. It may be next to, or completely away from the carriageway.

Separation

A physical feature separating space used by cycles and pedestrians on a traffic-free path, such as a kerb, white line or surfacing in different colours or materials.

Shared use path

A path which is shared by pedestrians and cycles but where motor traffic is not permitted. It can include footways alongside carriageways as well as routes completely away from roads, like in parks.

Side road treatment

Features which slow traffic turning in or out of a side road and enable easier pedestrian movement across the junction head. May include narrowing, tightening of corners and/or a raised table .

Traffic calming

Features which physically or psychologically slow traffic such as speed humps.

Underpass / subway

A crossing under a road or other barrier for use by pedestrians, possibly shared with cycles or with an adjacent section for cycling. Usually ramped and should not be stepped only to allow inclusive use.

Wayfinding

Over-arching term for measures to help people orient themselves and navigate from place to place. Includes directions signs both off and on a carriageway / path, surface markings, maps and any other information to assist pedestrians and cyclists with route planning.

Zebra crossing

Pedestrian only crossing with Zebra markings and Belisha beacons. May be on a raised table.